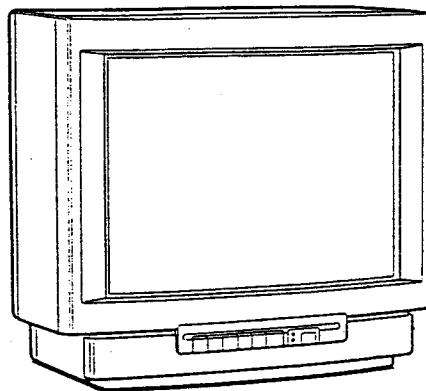


# KV-20TR22/20TS27

**RM-781      RM-783**

## SERVICE MANUAL



**US Model**

**KV-20TR22**

**Chassis No. SCC-D37G-A**

**KV-20TS27**

**Chassis No. SCC-D37H-A**

**Canadian Model**

**KV-20TS27**

**Chassis No. SCC-D36D-A**

## P-3B CHASSIS

MODELS OF THE SAME SERIES	
KV-20TR22/20TS27	KV-20TR10
KV-20TS20	KV-20TR12
KV-20TS24	

### SPECIFICATIONS

Television system	American TV standards
Channel coverage	VHF: 2 - 13 UHF: 14 - 69 Cable TV: 1 - 125
Picture tube	Microblack™ Trinitron tube 20-inch picture measured diagonally 21-inch picture tube measured diagonally
Antenna	75-ohm external antenna terminal for VHF/UHF
Input	VIDEO INPUT (phono jacks) Video: 1Vp-p, 75-ohms unbalanced, sync negative Audio: 500 mVrms (100% modulation) Impedance: 10 kilohms
Output (KV-20TS27 only)	AUDIO OUTPUT (VARIABLE) (phono jacks) More than 408 mVrms at the maximum volume setting (variable) (100% modulation)
Power requirements	120 V AC, 60Hz
Power consumption	125 W (Max.) 5 W (in standby condition)
Dimensions	527.0 x 488.5 x 482.0 mm (W/H/D) (20 3/4" x 19 1/4" x 19")
Weight	KV-20TS27: 23.4 Kg (51 lbs 10 oz) KV-20TR22: 23.1 Kg (50 lbs 15 oz)

### Supplied accessories

Model	Remote Commander
KV-20TS27	RM-783 (1)
KV-20TR22	RM-781 (1) with 2 size AA (R6) batteries

All Models	VHF/UHF telescopic dipole antenna (1)* Antenna connector (1)
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\* Except Canada

Optional accessories	U/V mixer EAC-66 Connecting cable VMC-606/607M VMC-810/820S RK-74A
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Designs and specifications are subject to change without notice.



MICROFILM

TRINITRON® COLOR TV  
**SONY®**

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**WARNING !!**

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.  
 THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

**SAFETY-RELATED COMPONENT WARNING !!**

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

**ATTENTION!!**

AFIN D'EVITER TOUT RISQUE D'ELECTROCUTION PROVENANT D'UN CHÂSSIS SOUS TENSION, UN TRANSFORMATEUR D'ISOLEMENT DOIT ÊTRE UTILISÉ LORS DE TOUT DÉPANNAGE.  
 LE CHÂSSIS DE CE RÉCEPTEUR EST DIRECTEMENT RACCORDÉ À L'ALIMENTATION SECTEUR.

**ATTENTION AUX COMPOSANTS RELATIFS À LA SÉCURITÉ!!**

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET PAR UNE MARQUE  SUR LES SCHÉMAS DE PRINCIPE, LES VUES EXPLOSÉES ET LES LISTES DE PIÈCES SONT D'UNE IMPORTANCE CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT. NE LES REMPLACER QUE PAR DES COMPOSANTS SONY DONT LE NUMÉRO DE PIÈCE EST INDUIT DANS LE PRÉSENT MANUEL OU DANS DES SUPPLÉMENTS PUBLIÉS PAR SONY. LES RÉGLAGES DE CIRCUIT DONT L'IMPORTANCE EST CRITIQUE POUR LA SÉCURITÉ DU FONCTIONNEMENT SONT IDENTIFIÉS DANS LE PRÉSENT MANUEL. SUIVRE CES PROCÉDURES LOIRS DE CHAQUE REMPLACEMENT DE COMPOSANTS CRITIQUES, OU LORSQU'UN MAUVAIS FONCTIONNEMENT EST SUSPECTÉ.

## SAFETY CHECK-OUT

(US Model only)

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cord for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the condition of the monopole antenna (if any).  
Make sure the end is not broken off, and has the plastic cap on it. Point out the danger of impalement on a broken antenna to the customer, and recommend the antenna's replacement.
8. Check the B+ and HV to see they are at the values specified. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
9. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

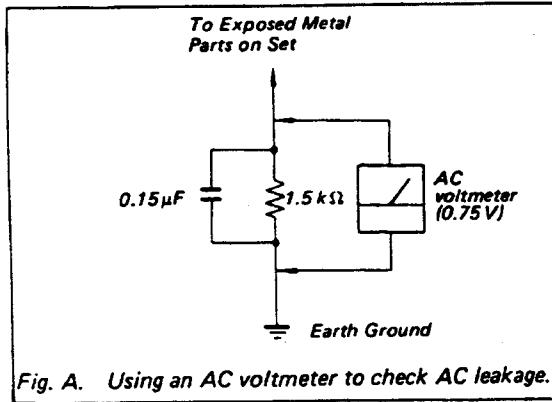


Fig. A. Using an AC voltmeter to check AC leakage.

### LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

### HOW TO FIND A GOOD EARTH GROUND

A cold-water pipe is guaranteed earth ground; the cover-plate retaining screw on most AC outlet boxes is also at earth ground. If the retaining screw is to be used as your earth-ground, verify that it is at ground by measuring the resistance between it and a cold-water pipe with an ohmmeter. The reading should be zero ohms. If a cold-water pipe is not accessible, connect a 60-100 watts trouble light (not a neon lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side of the line, the lamp should light at normal brilliance if the screw is at ground potential. (See Fig. B)

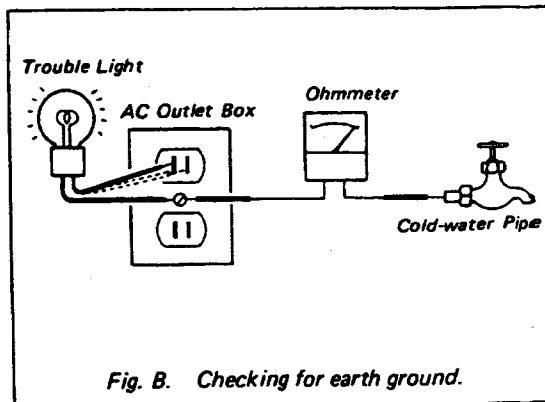
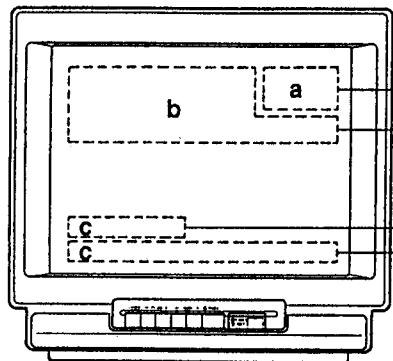


Fig. B. Checking for earth ground.

## 1-1. LOCATION OF CONTROLS

## SECTION 1 GENERAL

Front

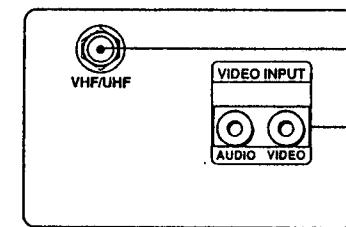


### On-Screen Displays

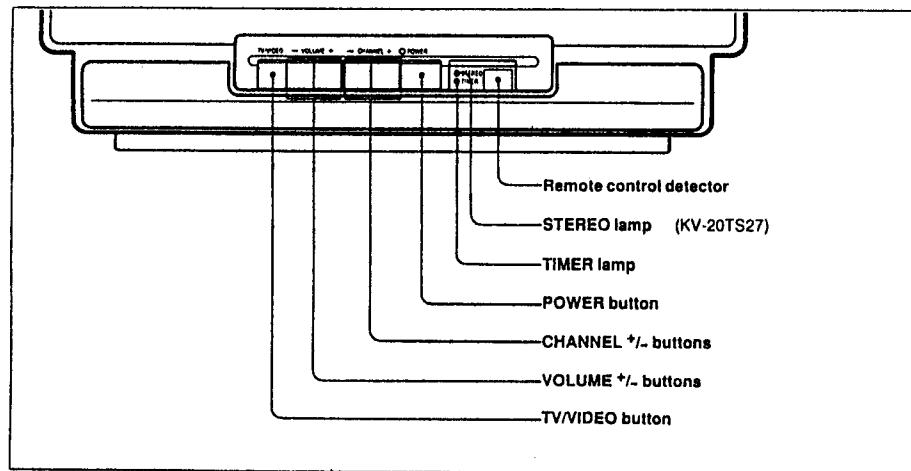
- a**
  - Channel numbers/Cable "C" display
  - MTS mode indication (KV-20TS27, KV-2137RS only)
  - "MUTING," "SLEEP" or "VIDEO" display
- b**
  - "AUTO PROGRAM," "TIMER" or "TIMER BLOCK" display
- c**
  - Bar display for volume or picture (HUE, COLOR, BRIGHTNESS, SHARPNESS) adjustment
  - Current time for TIMER/BLOCK

Rear

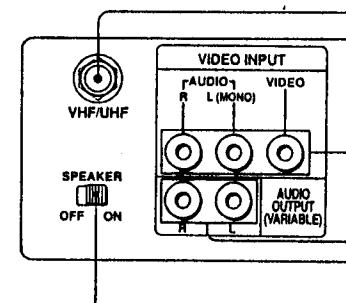
KV-20TR22  
KV-2127R



VHF/UHF antenna terminal  
VIDEO INPUT jacks (AUDIO/VIDEO)



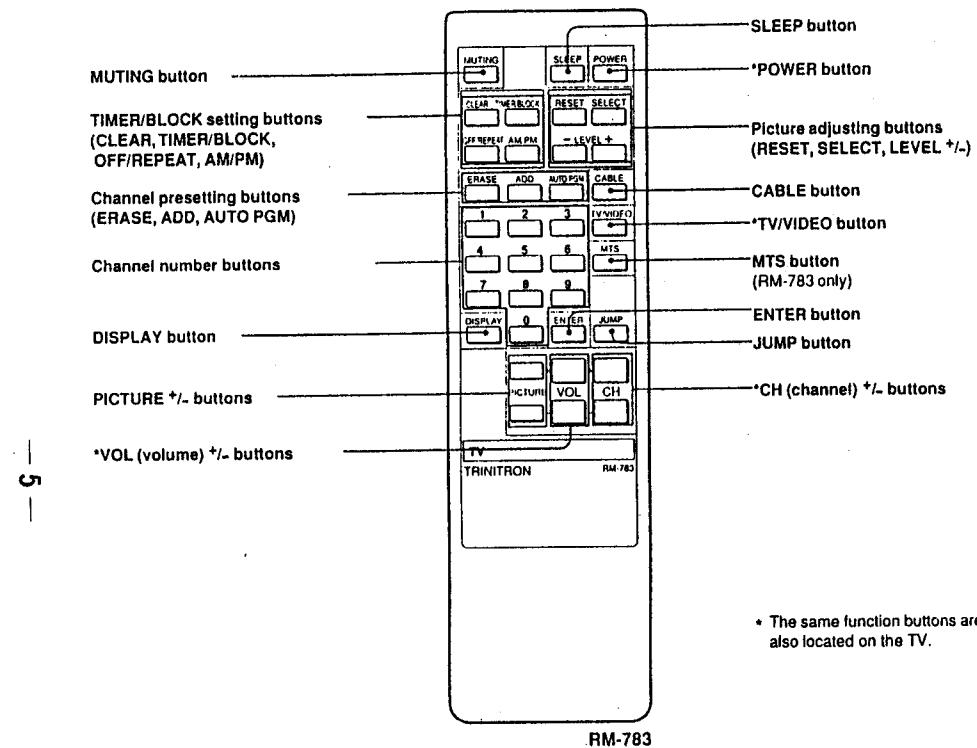
KV-20TS27  
KV-2137RS



VHF/UHF antenna terminal  
VIDEO INPUT jacks (AUDIO R, L (MONO) / VIDEO)  
AUDIO OUTPUT (VARIABLE) jacks  
SPEAKER ON/OFF switch

## 1-2. PRESETTING TV CHANNELS

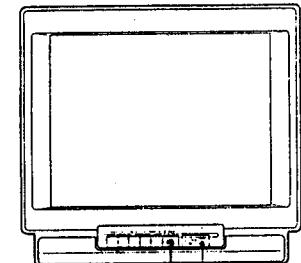
Remote Commander RM-781/RM-783



Use this feature to add channels to the channel scan memory.

### To Preset All Receivable Channels Automatically

KV-20TS27



- 1 Press POWER on the TV or the Remote Commander to turn the TV on.



- 2 Press CABLE so that the appropriate mode appears.



To preset VHF or UHF channels

3 C3

To preset cable TV channels

NOTE  
If "VIDEO" is displayed on the screen  
Press the TV/VIDEO button on the TV or on the Remote Commander  
so that a channel number appears.

- 3 Press AUTO PGM.



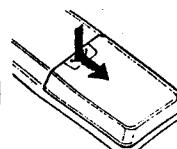
"AUTO PROGRAM" is displayed on the screen and receivable channels (other than the channels already preset) will be preset in numerical sequence. The channels previously preset remain in the TV's memory.  
When no more channels can be found, the programming stops and the lowest numbered channel is displayed.

- 4 To check or view preset channels  
Press CH +/-

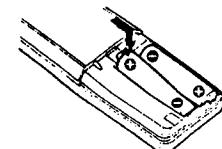
RM-783

#### Battery Installation

- 1 Open the lid.



- 2 Insert two size AA (R6) batteries in correct polarity.



- With normal operation, batteries will last up to half a year. If the Commander does not operate properly, the batteries might be exhausted. Replace them with new ones.
- To avoid damage from possible battery leakage, remove the batteries when not using the Commander for an extended period.
- If a Remote Commander that is not recommended is used to operate this TV, or if the supplied Remote Commander is used to operate another TV, the TV may not operate properly.

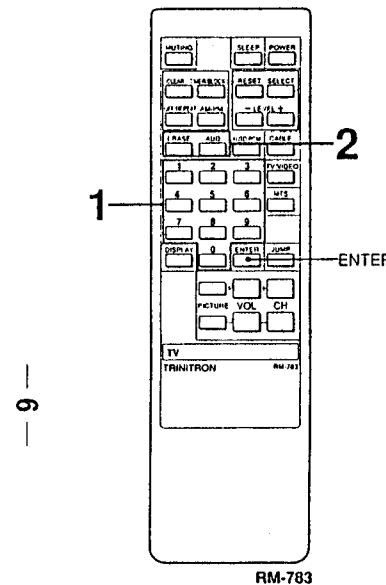
#### Channels that can be received on this TV:

VHF: 2 - 13  
UHF: 14 - 69  
Cable: 1 - 125

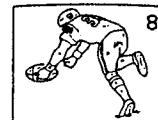
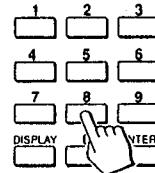
To add channels that could not be preset automatically because their signal strength was too weak, or to erase unnecessary channels, follow the steps in "To preset only the desired channels" on the next page.

### 1-3. USING THE TIMER/BLOCK FUNCTIONS

#### To Preset Only Desired Channels or to Erase Unnecessary Channels



1 Press the channel number button(s) and then press ENTER to select the channel you want to add or erase.



2 To add channels - Press ADD.



A "+" appears before the number for a moment.  
This channel has now been added to the channel scan memory.

To erase channels - Press ERASE.



A "-" appears before the number for a moment.  
This channel has now been erased from the channel scan memory.  
The next time the CH +/- button is pressed, this channel will be skipped.

Repeat steps 1 and 2 to add or erase other channels.

#### CAUTION

When a VHF or UHF channel is erased

The cable TV channel with the same number is also erased, and vice versa.

Number on this TV	1	5	6	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
Corresponding CATV channel	A-8	A-7	A-6	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	
31	32	33	34	35	36	37	38	39	93	94	95	96	97	98	99	100	101	102	123	124	125
R	S	T	U	V	W	W+1	W+2	W+3	W+57	W+58	A-5	A-4	A-3	A-2	A-1	W+59	W+60	W+61	W+82	W+83	W+84

Check with your local cable TV company for more complete information on the available channels.

\* This designation of cable TV channels conforms to the EIA/NCTA recommendation.

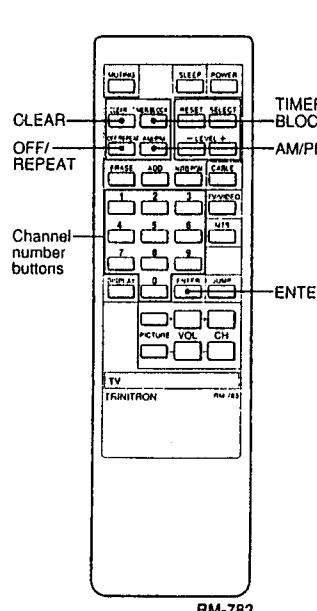
#### Note

Pay cable TV systems use scrambled or encoded signals and require special converters (decoders) in addition to the normal cable connection.

#### Available Functions

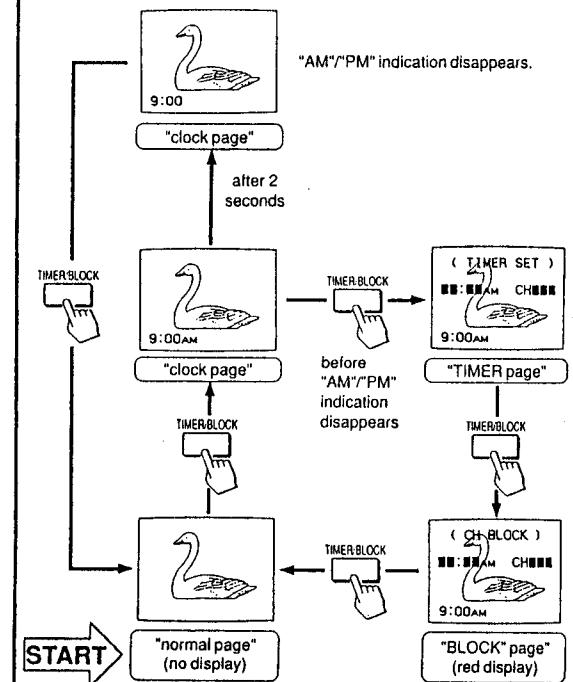
Internal clock	Once the internal clock is set, the current time will be displayed on the screen. You must set the clock correctly to activate the program start TIMER and channel BLOCK.
Program start TIMER	Makes a program of your choice appear on the screen automatically at the desired time.
Channel BLOCK	Blocks a channel from appearing on the screen for 12 hours. Use channel BLOCK to prevent children from watching undesirable programs.

The buttons used for the above functions are located on the Remote Commander.



To set the internal clock, program start TIMER and channel BLOCK, you need to go into the corresponding "pages": "clock page," "TIMER page" and "BLOCK page."

To change the "pages," press TIMER/BLOCK.

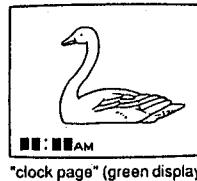


CAUTION
All settings will be erased from the TV's memory if the TV is unplugged, or if a power failure occurs.
The TIMER and BLOCK functions will operate only if the clock is set correctly.
If the TIMER and BLOCK are set for overlapping times on the same channel, the blocked channel will appear on the screen at the time set on the TIMER.

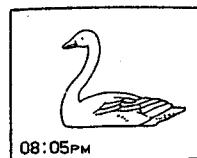
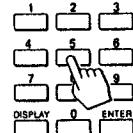
## Setting the Internal Clock

Example: To set the clock to 8:05 PM

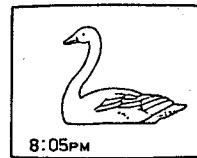
- 1** From "normal page" (no display), press TIMER/BLOCK once to change to "clock page."



- 2** Press 0, 8, 0, 5, AM/PM. (You must press the 0's)



- 3** If you have performed the operation correctly, press ENTER.  
The screen display will blink once, indicating that the clock has been set. (The 0 in front will disappear.)



If you make a mistake, press CLEAR and proceed from step 2.

The "AM/PM" indication will disappear after a few seconds.

To summon "TIMER page," press TIMER/BLOCK before the "AM"/"PM" indication disappears.

To return to "normal page," press TIMER/BLOCK after the "AM"/"PM" indication has disappeared.

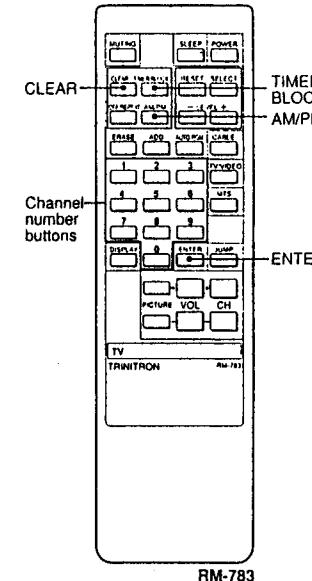
To reset the clock, summon "clock page" and press CLEAR before the "AM"/"PM" indication disappears. Then follow the steps above from step 2.

12:00 AM stands for midnight.  
12:00 PM stands for noon.

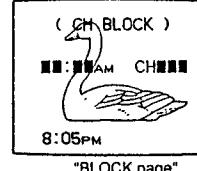
## Setting Channel BLOCK

Make sure that the clock has been set correctly before setting channel BLOCK. (p. 17)

EXAMPLE: To set a BLOCK for a program which begins at 9:30 AM on channel 8

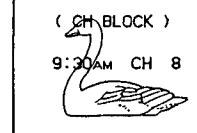
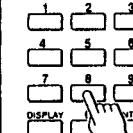


- 1** To change from "normal page" to "BLOCK page," press TIMER/BLOCK three times.



"BLOCK page"

- 2** Press 0, 9, 3, 0, ENTER (you must press the 0's).  
The screen display will blink once, indicating that the time has been set.  
Press 8, ENTER (0 not necessary).  
The numbers will blink, indicating that the channel has been set.



The display BLOCKED will appear for a few seconds, then (CH BLOCK). The Channel BLOCK has now been set.

If you make a mistake, press CLEAR and proceed from step 2.

At the preset time, the picture of the selected channel will be blocked from view and the sound will be muted.  
The display "BLOCKED" will appear for a few seconds, then (CH BLOCK) which will remain on the screen during the time the channel is blocked. (Both displays in red)

Normal reception will resume automatically after 12 hours.

To restore normal reception while the channel is blocked, recall "BLOCK page" and press CLEAR.

The BLOCK setting blocks a specified channel for the same 12-hour period every day.

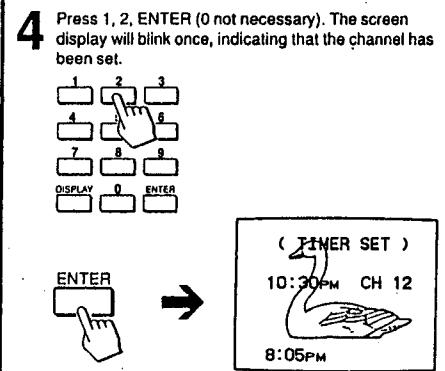
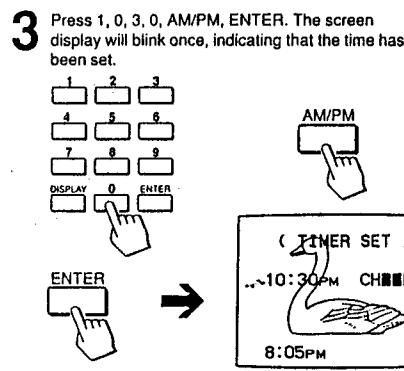
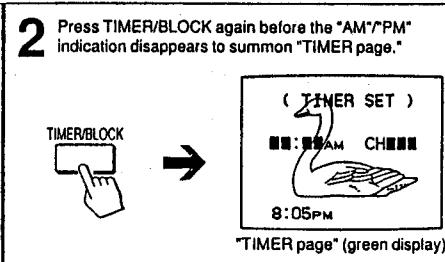
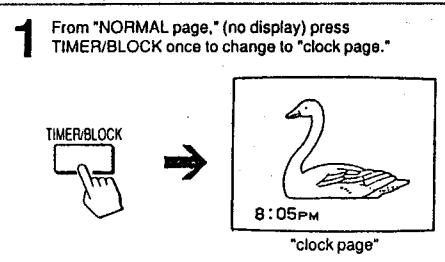
To clear the BLOCK setting, summon "BLOCK page" and press CLEAR.

To reset, clear the setting and follow the steps above from step 2.

## Setting the Program Start TIMER

Make sure that the clock has been set correctly before setting the program start TIMER.

EXAMPLE: To set the TIMER for a program which begins at 10:30 PM on channel 12



If you make a mistake, press CLEAR and proceed from step 3.

At the preset time, the selected channel will appear on the screen and the TIMER lamp will go out. The TIMER will operate whether you are watching a TV program or a VCR playback, or even if the TV is turned off.

If no button is pressed within 2 hours after the preset time, an "OFF" display will appear on the screen for 1 minute. If a button is still not touched during that minute, the TV will turn off automatically as a safety precaution.

The TIMER operates only once, but the time and the channel will remain in the TV's memory.

To preset the same channel at the same time for a future date, press OFF/REPEAT. The TIMER lamp will light up, indicating that the TIMER has been reactivated.

To deactivate the TIMER, press OFF/REPEAT again so that the TIMER lamp goes out. It is not necessary to summon "TIMER page" before using the OFF/REPEAT button. Furthermore, this button is effective even if the TV is turned off.

To clear the TIMER setting, summon "TIMER page" and press CLEAR.

To reset, clear the setting and follow the steps from step 3.

## 1-4. OTHER USEFUL FEATURES

### Muting the sound – MUTING button

1. Press MUTING.
2. The display "MUTING" will appear on the screen.
3. To restore the sound, press MUTING again, or press VOL +.

### Using the SLEEP timer – SLEEP button

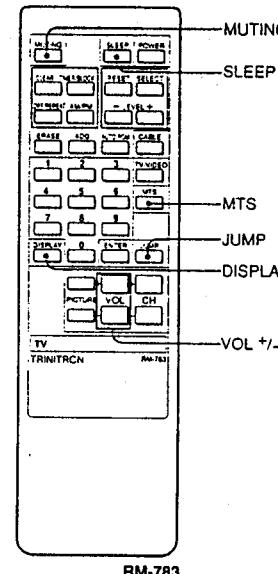
- TO SET: (Turns TV off automatically about 1 hour after setting)
1. Press SLEEP.
  2. A green "SLEEP ON" display appears for a few seconds.
  3. A red "SLEEP" display will appear 1 minute before the TV shuts off.

#### TO CANCEL:

- Press SLEEP again.  
A green "SLEEP OFF" display appears for a few seconds.

#### OR

Turn the TV off. The sleep timer setting will be cancelled.



### Receiving a Multichannel TV Sound Program – MTS button (KV-20TS27, KV-2137RS only)

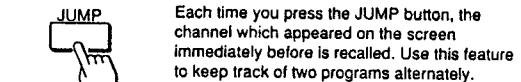
Each time you press MTS, the MAIN, SAP (Second Audio Program) and MONO modes are selected in sequence. The display (in green) for each mode will appear on the screen for a few seconds.  
(NOTE: During SAP mode, the sound of non-SAP programs will be muted.)

#### TO LISTEN TO STEREO SOUND:

1. Press MTS to select the MAIN mode.
2. The MAIN display will appear on screen.
3. The STEREO indicator lamp on the TV will light up whenever a stereo broadcast is received.

NOTE: A weak incoming signal may cause excessive noise with some stereo broadcasts.  
Switch to MONO mode to eliminate this noise.

### Switching quickly between 2 channels – JUMP button



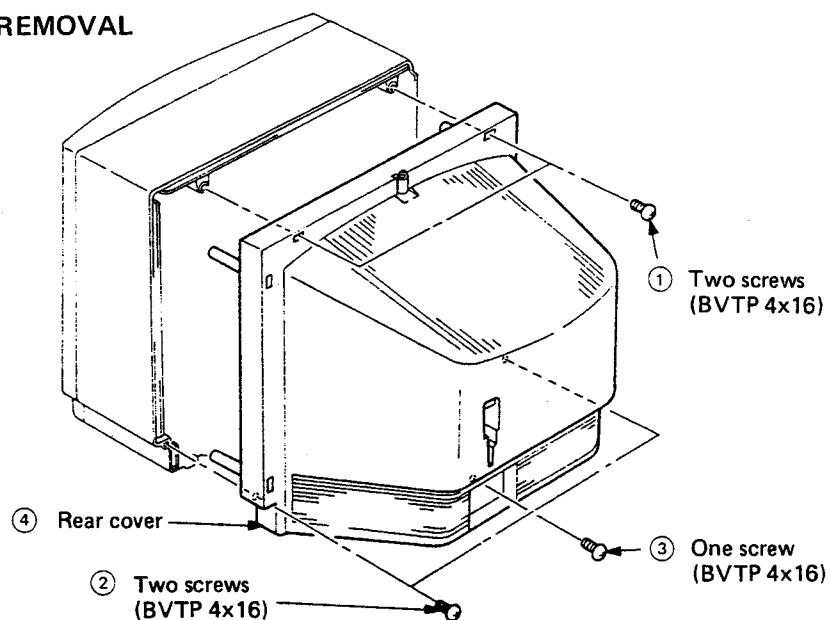
### Keeping the channel displayed – DISPLAY button

TO DISPLAY the channel:  
Press DISPLAY.  
The channel display will remain on the screen.

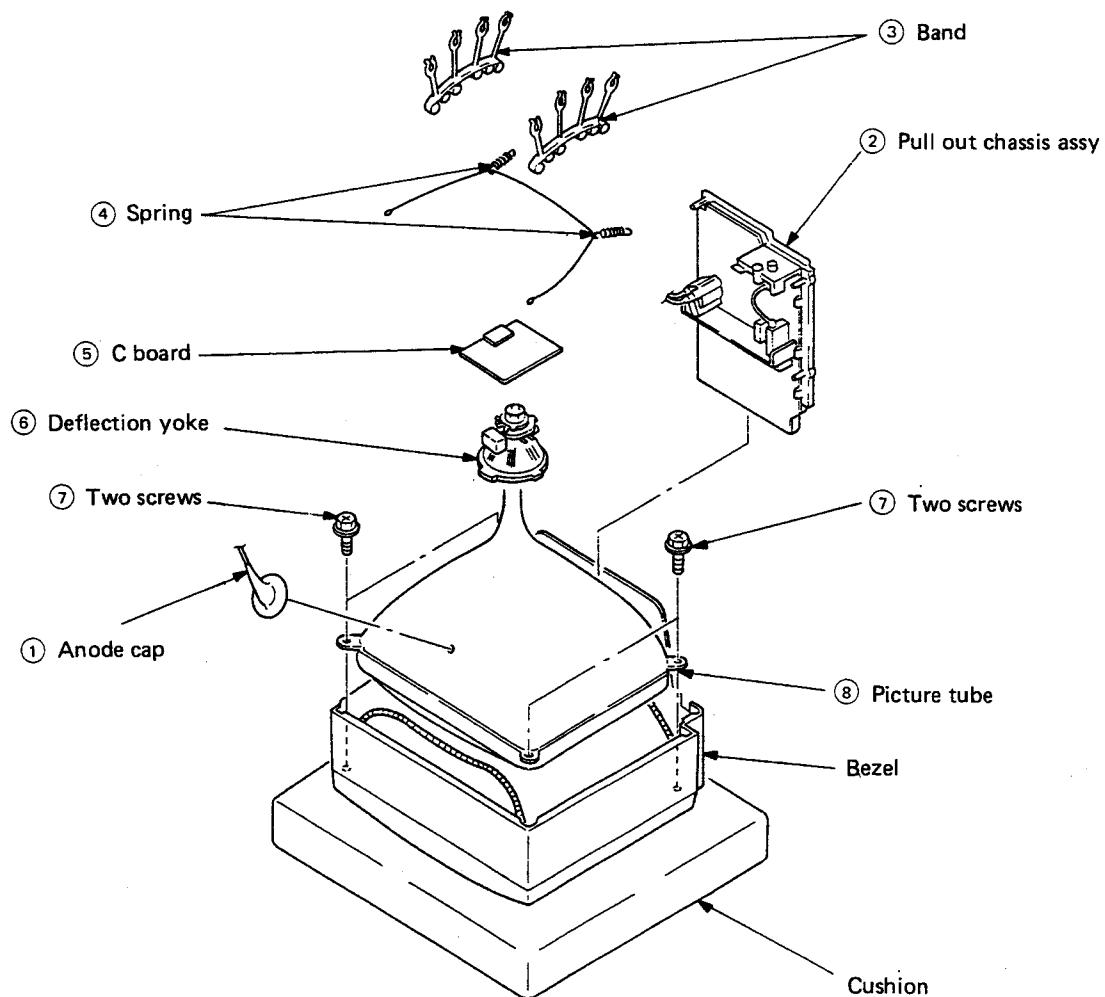
TO CANCEL the display:  
Press DISPLAY again.  
The channel display will disappear.

## SECTION 2 DISASSEMBLY

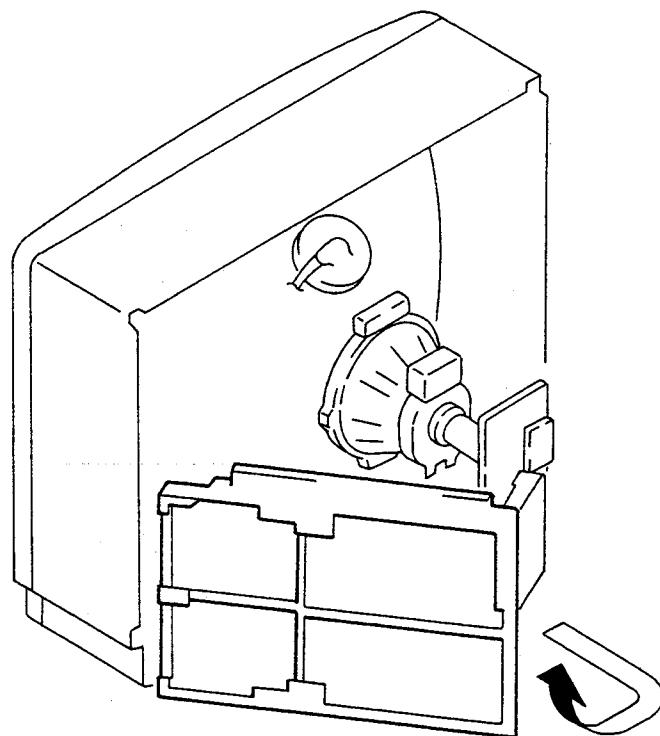
### 2-1. REAR COVER REMOVAL



### 2-2. PICTURE TUBE REMOVAL

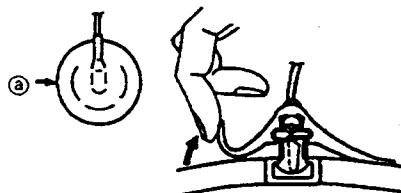


## 2-3. SERVICE POSITION

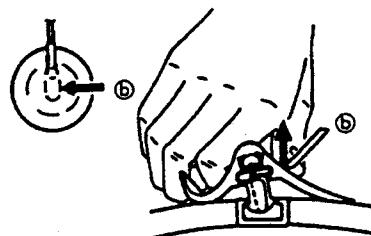


### • REMOVAL OF ANODE-CAP

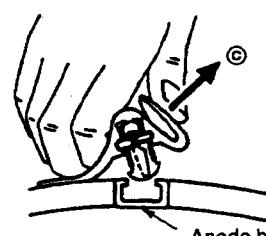
#### • REMOVING PROCEDURES



① Turn up one side of the rubber cap in the direction indicated by the arrow ②.



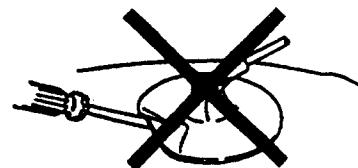
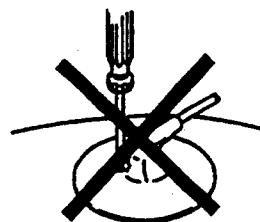
② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⑤.



③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⑦.

### • HOW TO HANDLE AN ANODE-CAP

- ① Don't hurt the surface of anode-caps with sharp shaped material!
- ② Don't press the rubber hardly not to hurt inside of anode-caps!  
A material fitting called as shatter-hook terminal is built in the rubber.
- ③ Don't turn the foot of rubber over hardly!  
The shatter-hook terminal will stick out or hurt the rubber.



## SECITON 3

### SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These abjustments should be performed with rated power supply voltage unless otherwise noted.

Controls and switch should be set as follows unless otherwise noted :

PICTURE control ..... MAXIMUM  
BRIGHTNESS control ..... MAXIMUM

- Perform the adjustments in order as follows :
1. Beam Landing
  2. Convergence
  3. Focus
  4. Sub Brightness
  5. White Balance

**Note :** Test Equipment Required.

1. Color-bar/Pattern Generator
2. Degausser

#### 3-1. BEAM LANDING

##### Preparation.

- Feed in the white pattern.
  - Before starting, degauss the entire screen.
1. Loosen deflection yoke screw.
  2. Adjust purity control as shown in Fig.3-1.
  3. Slide deflection yoke as far forward as it will go.
  4. Turn the raster signal of the pattern generator to red.
  5. Adjust purity control to center vertical red band as shown in Fig.3-2.
  6. Slide deflection yoke back for a uniform red screen.
  7. Check green and blue rasters for uniformity by performing the same way as steps 4, 5 and 6.
  8. Tighten the deflection yoke screw.
  9. Check if mislanding appears at corners a-d as shown in Fig. 3-3. If mislandig is observed, correct it as shown in Fig. 3-3.
  10. Confirm that beam landing is correct when the receiver is faced in all directions.

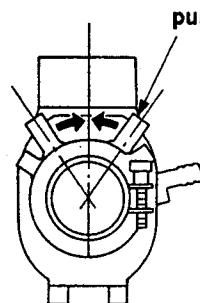


Fig. 3-1.

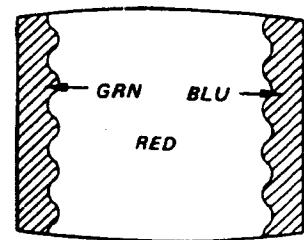


Fig. 3-2.

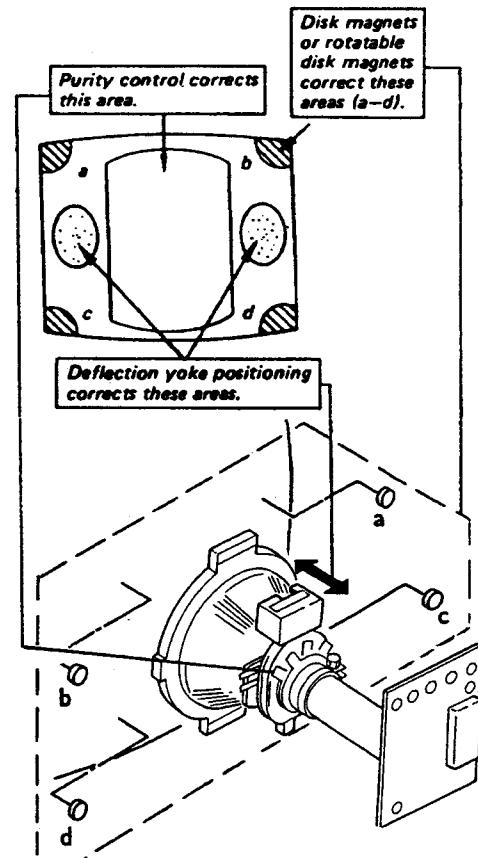
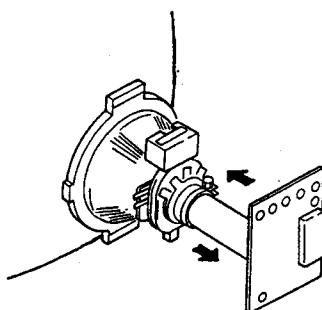


Fig. 3-3.

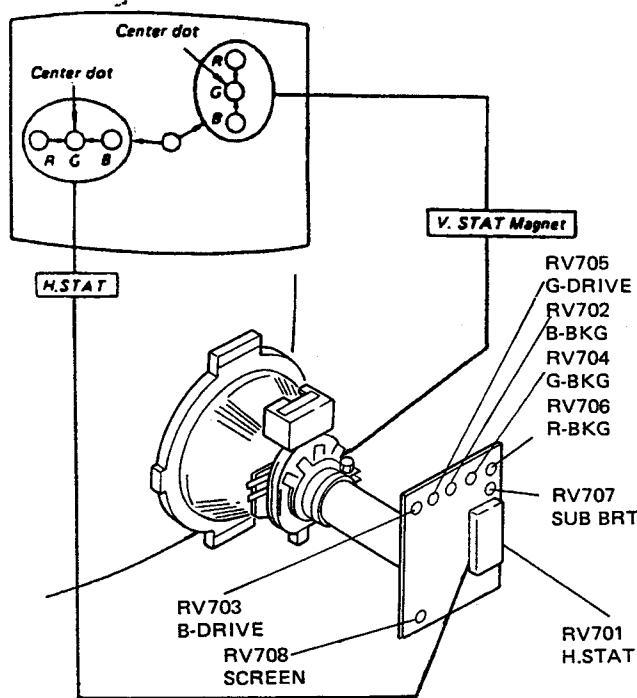


### 3-2. CONVERGENCE

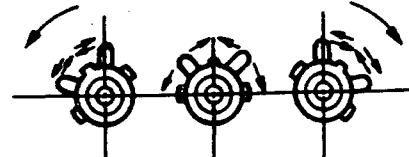
#### Preparation :

- Before starting, perform FOCUS, H. SIZE and V. SIZE adjustments.
- Set BRIGHTNESS control to fully counterclockwise.
- Feed in the dot pattern.

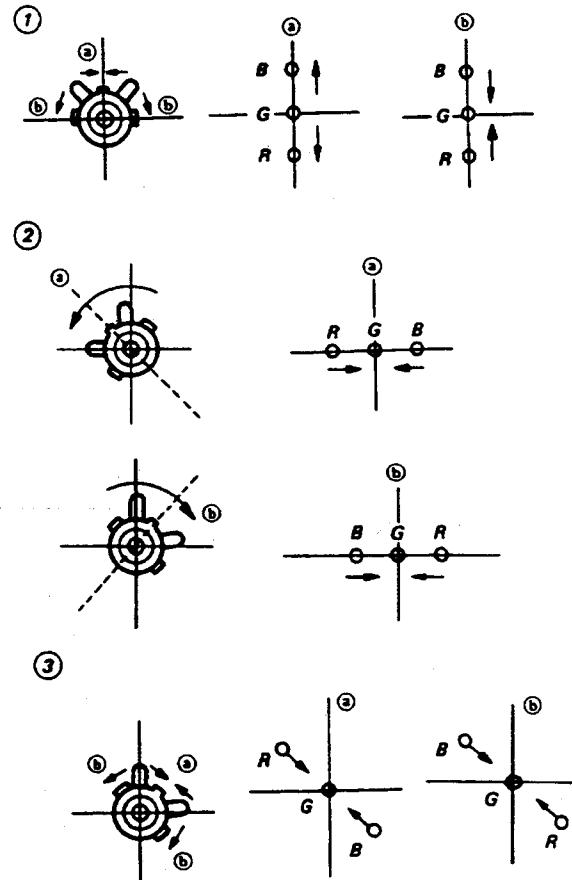
#### (1) Horizontal and Vertical Static Convergence



1. Adjust H. STAT VR to coincide red, green and blue dots on the center of screen.  
(Horizontal movement)
2. Adjust V. STAT magnet to coincide red, green and blue dots on the center of screen.  
(Vertical movement)
3. If the red, green and blue dots do not coincide on the center of screen with H. STAT VR, perform horizontal convergence adjustment using H. STAT VR and V. STAT magnet as shown below.  
(In this case, H. STAT VR and V. STAT magnet effect each other.)
- Tilt the V. STAT magnet and adjust static convergence to open or close the V. STAT magnet.



4. When the V. STAT magnet is moved in the direction of arrow ② and ⑥, Red, Green and Blue dots move as shown below.

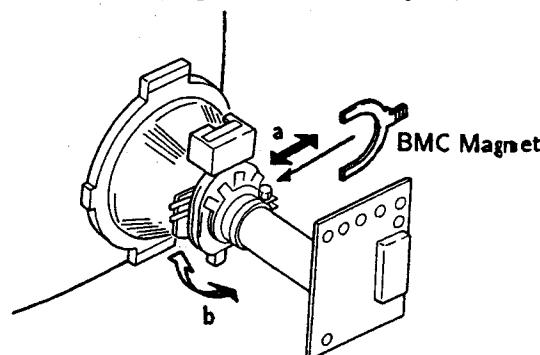


If blue dot dose not coincide with red and green dots, perform following steps.

Move BMC magnet (a) to correct insufficient H. static convergence.

Rotate BMC magnet (b) to correct insufficient V. static convergence.

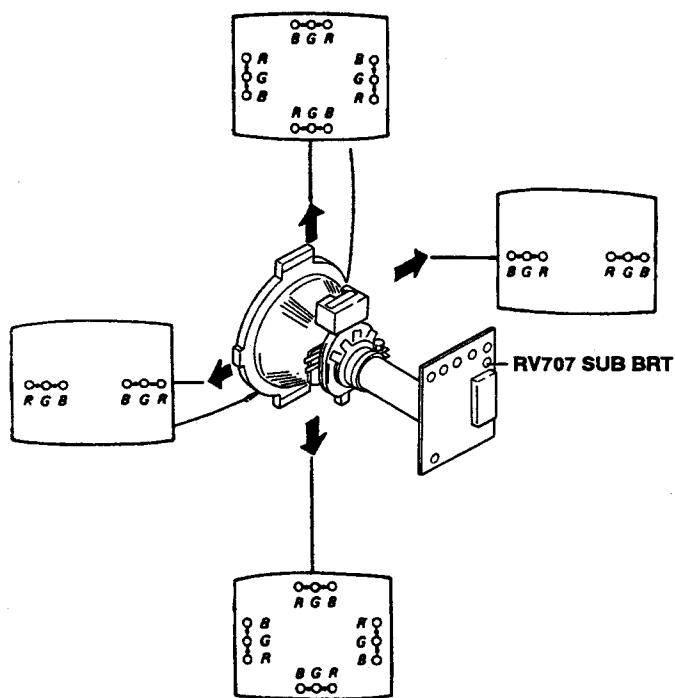
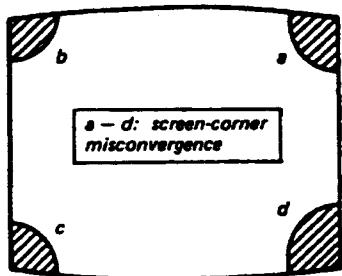
In either case, repeat Beam Landing Adjustment.



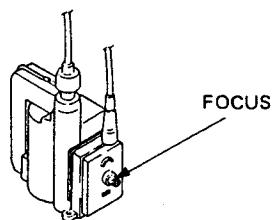
**(2) Dynamic Convergence Adjustment****Preparation :**

- Before starting, perform Horizontal and Vertical Static Convergence Adjustment.

  1. Loosen deflection yoke screw.
  2. Remove deflection yoke spacers.
  3. Move the deflection yoke for best convergence as shown below.
  4. Tighten the deflection yoke screw.
  5. Install the deflection yoke spacers.

**(3) Screen-corner Convergence****3-3. FOCUS (G4)**

Adjust FOCUS control for a best picture.

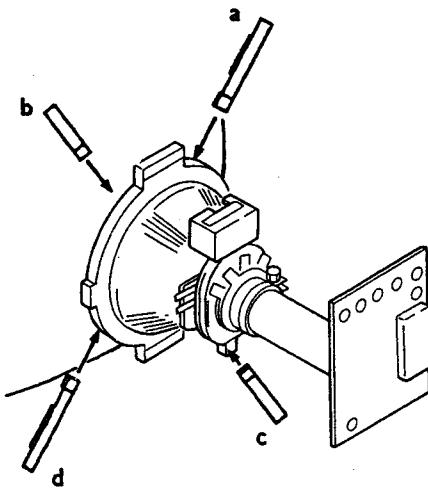
**3-4. SUB BRT (RV707)**

1. Feed in a cross-hatch pattern.
2. Set PICTURE and BRIGHTNESS to minimum.
3. Turn RV707 (SUB BRT) slowly to obtain a faintly visible cross-hatch.

**3-5. WHITE BALANCE**

Feed in the cross-hatch pattern.

1. Set BRIGHTNESS and PICTURE controls to minimum.
2. Turn RV703 (B.DRIVE) and RV705 (G. DRIVE) fully counterclockwise.
3. Set RV706 (R.BKG), RV704 (G.BKG), RV702 (B.BKG) and RV707 (SUB BRT) to mechanical center.
4. Turn RV708(SCREEN) slowly to obtain a faintly visible cross-hatch. Note the color that first becomes visible by turning RV708. Do not turn a BKG control for this color.
5. Adjust the other two BKG controls for best white balance (neutral gray) of the faint cross-hatch.
6. Set BRIGHTNESS and PICTURE controls to maximum. Observe the screen and adjust the DRIVE controls for best white balance.
7. Repeat Steps 1 through 6 several times.



Permalloy

## SECTION 4

### SAFETY RELATED ADJUSTMENTS

#### R324 CONFIRMATION METHOD (HV HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

The following adjustments should always be performed when replacing the following components (marked with  on the schematic diagram).

IC601, IC301, PM501, D501, D321, C565, C563, R565, R512, R325, R324, T504, DY

#### 1. Preparation before confirmation

- 1) Turn the POWER switch ON, and receive entirely white signals and set the PICTURE and BRIGHT controls to maximum.
- 2) Confirm that voltage of the check terminal of pin ④ of A-14 (A BOARD) is more than 110.0V DC when the set is operating normally with  $120.0 \pm 2.0$  V AC supply.

#### 2. Hold-down operation confirmation

- 1) Turn the POWER switch ON, and receive entirely white signals and adjust ABL current to  $1430 \pm 50 \mu\text{A}$  with PICTURE and BRIGHT etc controls.
- 2) Apply DC voltage to the check terminal of pin ④ of A-14 (A BOARD) via 1T40 from the DC stabilized power source. Confirm that the minimum voltage is less than 129.0V DC whereby the raster disappears during operation of hold-down circuit.

**NOTE:** When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

- 3) Turn the POWER switch ON, and receive dot signals and adjust ABL current to  $140 \pm 50 \mu\text{A}$  with PICTURE and BRIGHT etc controls.
- 4) Apply DC voltage to the check terminal of pin ④ of A-14 (A BOARD) via 1T40 from the DC stabilized power source.

Confirm that the minimum voltage is less than 129.0V DC whereby the raster disappears during operation of hold-down circuit.

**NOTE:** When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

#### 3. Hold-down readjustment

When step 2 is not satisfied, readjustment should be performed by altering the resistance value of R324 (a component marked with ).

#### R322 CONFIRMATION METHOD (+B HOLD-DOWN CONFIRMATION) AND READJUSTMENTS

The following adjustments should always be performed when replacing the following components (marked with  on the schematic diagram).

IC301, PM501, D501, R565, R512, R322

#### 1. Preparation before confirmation

- 1) Supply  $120 \pm 2.0$  V AC to with variable auto-transformer.

#### 2. Hold-down operation confirmation

- 1) Turn the POWER switch ON, and receive entirely white signals and adjust ABL current to  $1430 \pm 50 \mu\text{A}$  with PICTURE and BRIGHT etc controls.
- 2) Apply DC voltage to the check terminal of pin ② of PM501 (A BOARD) via 1T40 from the DC stabilized power source. Confirm that the minimum voltage is less than 155.5V DC whereby the raster disappears during operation of hold-down circuit.

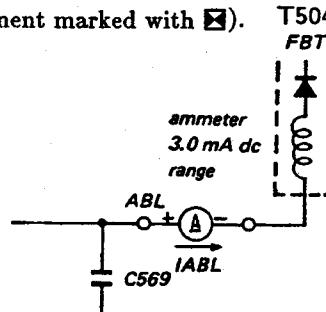
**NOTE:** When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

- 3) Turn the POWER switch ON, and receive dot signals and adjust ABL current to  $140 \pm 50 \mu\text{A}$  with PICTURE and BRIGHT etc controls.
- 4) Apply DC voltage to the check terminal of pin ② of PM501 (A BOARD) via 1T40 from the DC stabilized power source. Confirm that the minimum voltage is less than 155.5V DC whereby the raster disappears during operation of hold-down circuit.

**NOTE:** When the hold-down circuit starts operating, switch OFF the POWER of the set immediately.

#### 3. Hold-down readjustment

When step 2 is not satisfied, readjustment should be performed by altering the resistance value of R322 (a component marked with ).



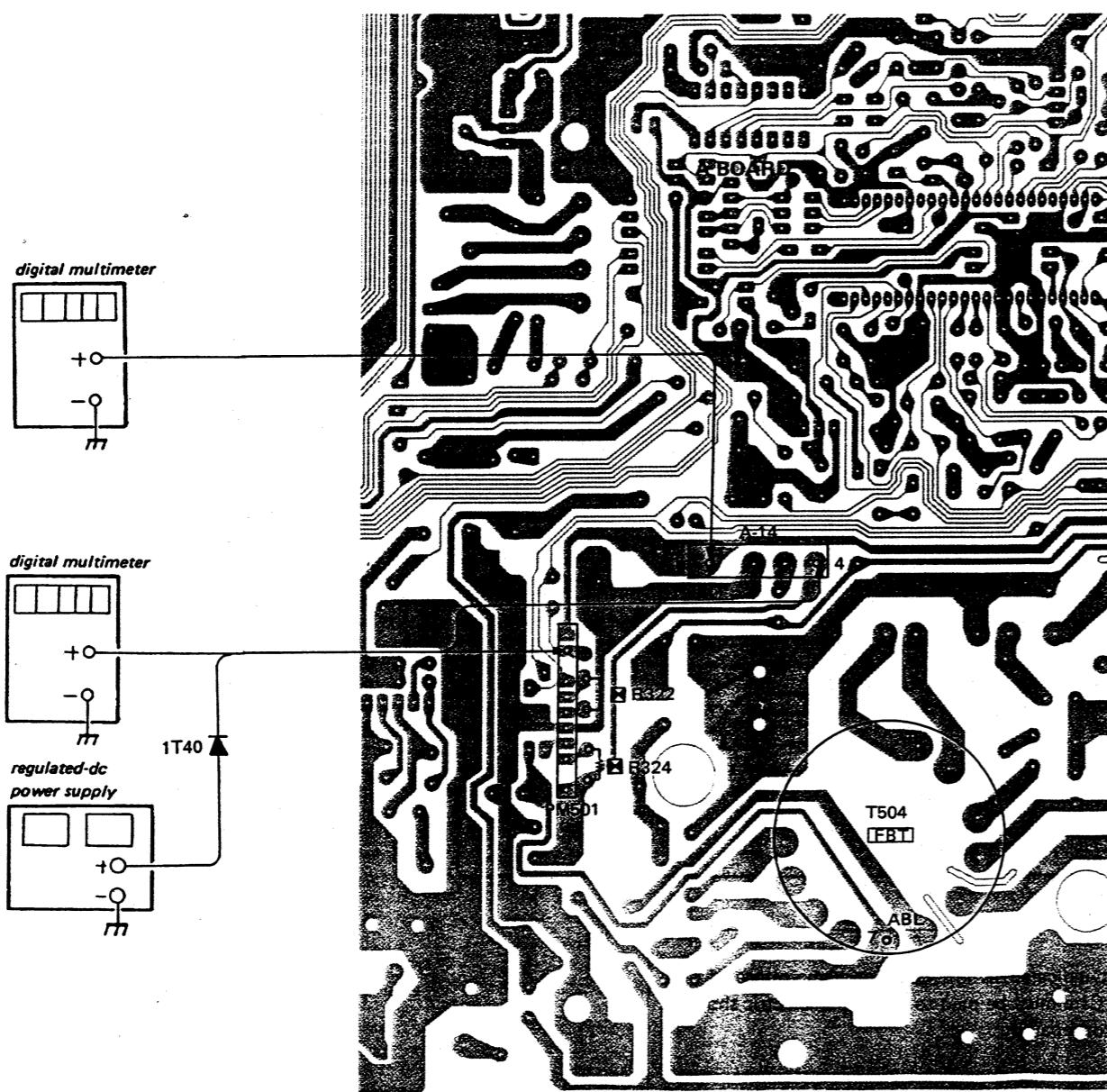
\*Use a digital multimeter whose input impedance is over  $100\text{M}\Omega$  when confirming the voltage of the protector terminal.

## SECTION 5 CIRCUIT ADJUSTMENTS

### +B VOLTAGE CONFIRMATION

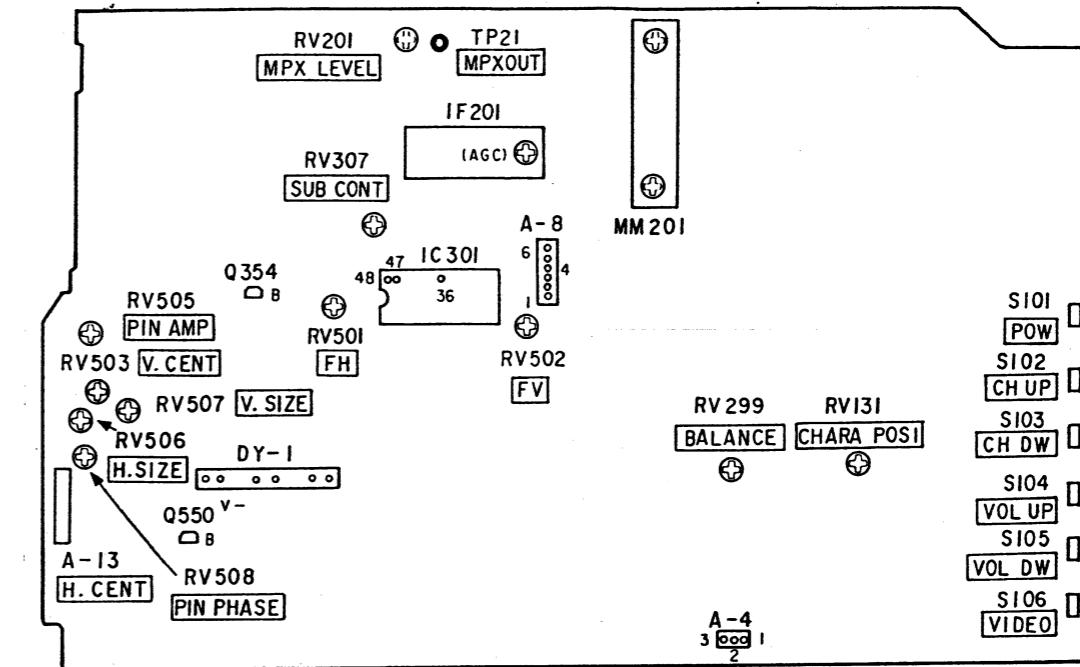
The following adjustments should always be performed when replacing IC601.

- 1) Supply  $130 \pm 2\%$  AC to with variable auto-transformer.
- 2) Receive entirely monoscope signal.
- 3) Set the PICTURE control and the BRIGHT controls in to initial reset.
- 4) Confirm the voltage of pin ① of A-14 ( A BOARD) is less than 138.0V DC.
- 5) If step 4) is not satisfied, replace IC601 repeat above steps.



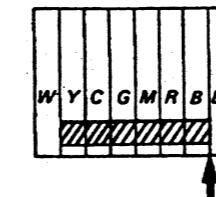
### 5-1. A BOARD ADJUSTMENTS

#### A BOARD (COMPONENT SIDE)



#### CHARA POSITION ADJUSTMENT (RV131)

1. Receive a color-bar signal.
2. Set the PICTURE button to maximum.
3. Adjust RV131 to the point where the arrow indicate.



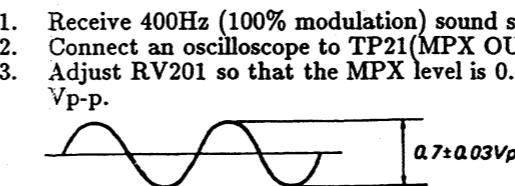
#### (KV-20TS27 ONLY)

#### AUDIO BALANCE ADJUSTMENT (RV299)

1. Recieve monoral signal.
2. Connect the dual-trace-oscilloscope at SP out Lch (A-4 connector ①) and Rch (A-4 connector ②).
3. Adjust RV299 so that Lch and Rch are same level.

#### SUB CONTRAST ADJUSTMENT (RV307)

1. Receive a color-bar signal.  
PICTURE ..... MAX  
BRT ..... CENTER  
COLOR ..... MIN
2. Connect circuit between Base of Q354 and 9.0V line with a jumper wire.
3. Draw A-8 - C-3 connector (C Board).
4. Connect an oscilloscope to the pin ④ of A-8 connector (blue out).
5. Adjust RV307 (SUB CONT) so that voltage is  $2.1 \pm 0.05$  Vp-p.



#### RF AGC ADJUSTMENT (IF201)

1. Receive an off-air signal.
2. Adjust AGC VR (AGC VR of IF201) so that snow noise and cross-modulation just disappear from the picture.

#### MPX LEVEL ADJUSTMENT (RV201)

1. Receive 400Hz (100% modulation) sound signal.
2. Connect an oscilloscope to TP21(MPX OUT).
3. Adjust RV201 so that the MPX level is  $0.7 \pm 0.03$  Vp-p.

H.FI

1.  
2.  
3.  
4.  
5.

V.FI

1.  
2.  
3.  
4.  
5.

PIN  
Adj

PIN  
Adj

H.C

1.  
2.  
3.

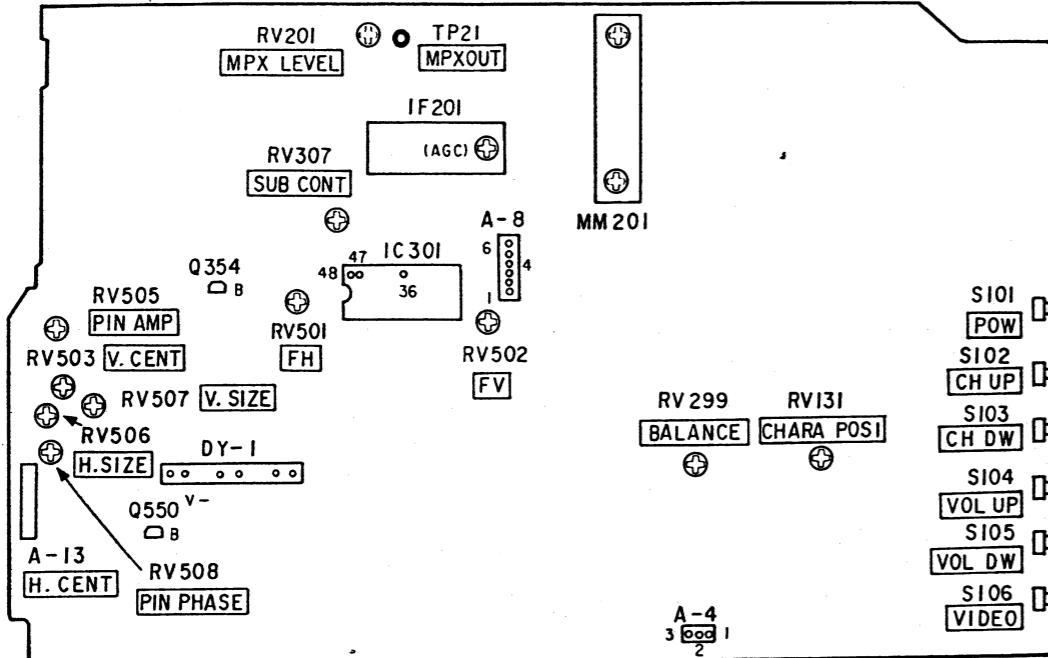
V.C

1.  
2.  
3.

## SECTION 5 CIRCUIT ADJUSTMENTS

### 5-1. A BOARD ADJUSTMENTS

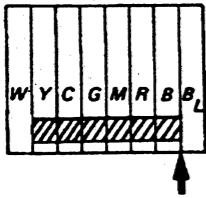
A BOARD (COMPONENT SIDE)



(KV-20TS27 ONLY)

#### CHARA POSITION ADJUSTMENT (RV131)

- Receive a color-bar signal.
- Set the PICTURE button to maximum.
- Adjust RV131 to the point where the arrow indicates.



#### RF AGC ADJUSTMENT (IF201)

- Receive an off-air signal.
- Adjust AGC VR (AGC VR of IF201) so that snow noise and cross-modulation just disappear from the picture.

#### MPX LEVEL ADJUSTMENT (RV201)

- Receive 400Hz (100% modulation) sound signal.
- Connect an oscilloscope to TP21(MPX OUT).
- Adjust RV201 so that the MPX level is  $0.7 \pm 0.03$  Vp-p.

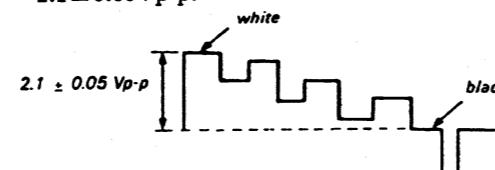


#### AUDIO BALANCE ADJUSTMENT (RV299)

- Receive monoral signal.
- Connect the dual-trace-oscilloscope at SP out Lch (A-4 connector ①) and Rch (A-4 connector ②).
- Adjust RV299 so that Lch and Rch are same level.

#### SUB CONTRAST ADJUSTMENT (RV307)

- Receive a color-bar signal.  
PICTURE ..... MAX  
BRT ..... CENTER  
COLOR ..... MIN
- Connect circuit between Base of Q354 and 9.0V line with a jumper wire.
- Draw A-8 - C-3 connector (C Board).
- Connect an oscilloscope to the pin ④ of A-8 connector (blue out).
- Adjust RV307 (SUB CONT) so that voltage is  $2.1 \pm 0.05$  Vp-p.



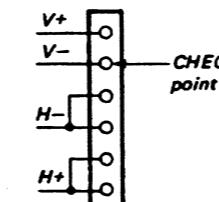
#### H.FREQ ADJUSTMENT (RV501)

- Receive an off-air signal.
- Connect circuit between pin ④8 of IC301 (H IN) and pin ③6 of IC301 (VCC2) with a jumper wire.
- Connect the frequency counter across Base of Q550 and ground.
- Adjust RV501 for  $15,734\text{kHz} \pm 70\text{Hz}$  on the frequency counter.
- Disconnect a jumper wire from IC301.

#### V.FREQ ADJUSTMENT (RV502)

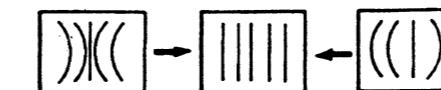
- Receive an off-air signal.
- Connect circuit between pin ⑦ of IC301 (V IN) and pin ⑧ of IC301 (VCC2) with a jumper wire.
- Connect the frequency counter across DY-1 connector (V.DY) and ground.
- Adjust RV502 for  $55.0 \pm 0.3\text{Hz}$  on the frequency counter.
- Disconnect a jumper wire from IC301.

DY-1 connector



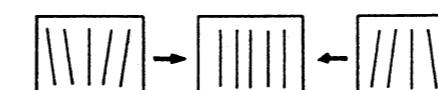
#### PIN AMP ADJUSTMENT (RV505)

Adjust pin amplification with RV505.



#### PIN PHASE ADJUSTMENT (RV508)

Adjust pin phase with RV508.



#### H.CENT ADJUSTMENT (A-13)

- Receive a cross-hatch signal.
- Set PICTURE and BRT to normal.
- Adjust H.CENT (H.CENT TAP=A-13) for best picture.

#### V.CENT ADJUSTMENT (RV503)

- Receive a cross-hatch signal.
- Set PICTURE and BRT to normal.
- Adjust V.CENT (RV503) for best picture.

## WARNING !!

When you replace a memory IC, make sure of the functioning remote commander and proper sound with the power switch on.  
If you find any troubles, take actions as shown below.

### For remote commander :

Set the main power switch to OFF and press it again to turn the unit on.

### For sound :

Switch the unit from MAIN to SAP to MONO mode by the MTS switch ( or MTS button on the commander ) to make sure of sound with MONO mode. Note that the sound is of proper volume and the speaker on/off switch is set to ON.

#### H.SIZE ADJUSTMENT(RV506)

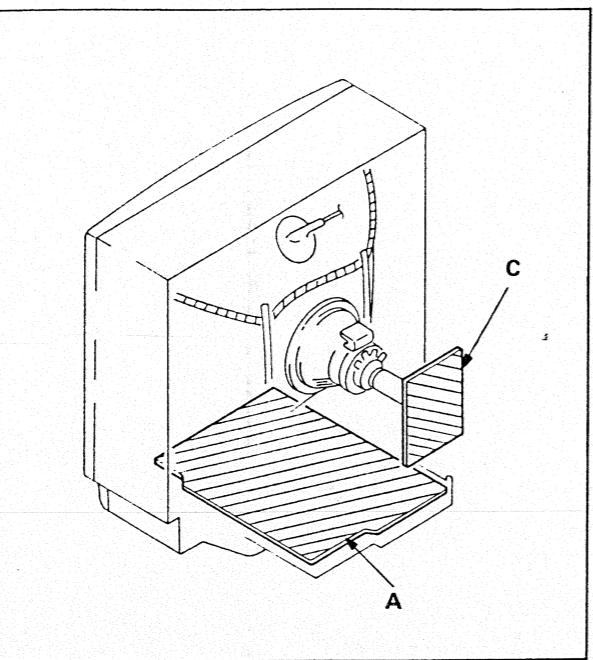
- Receive a monoscope signal.
- Adjust RV506 for  $15.0 \pm 0.2$  divisions.

#### V.SIZE ADJUSTMENT(RV507)

- Receive a monoscope signal.
- Adjust RV507 for  $11.25 \pm 0.1$  divisions.

## SECTION 6 DIAGRAMS

### 6-1. CIRCUIT BOARDS LOCATION



### 6-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS —Conductor Side—

Note: The components identified by shading and mark  $\triangle$  are critical for safety. Replace only with part number specified.

Note: Les composants identifiés par un trame et une marque  $\triangle$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Note:

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. p:  $\mu\mu\text{F}$   
50 WV or less are not indicated except for electrolytic and tantalum.
- All resistors are in ohms.  
 $\text{k}\Omega = 1000\Omega$ ,  $\text{M}\Omega = 1000\text{K}\Omega$
- Indication of resistance, which does not have one for rating electrical power is as follows.

Pitch: 5 mm  
Rating electrical power: 1/4W

- $\square$  : nonflammable resistor.
- $\square$  : fusible resistor.
- $\triangle$  : internal component.
- $\boxed{\quad}$  : panel designation or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

- The components identified by  $\square$  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
  - When replacing components indicated by  $\square$  mark the necessary adjustments indicated. If results do not meet the specified value, change the component identified by  $\square$  and repeat the adjustment until the specified value is achieved. (Refer to R322, 324 adjustment on page 15)
- When replacing the part in below table, be sure to perform the related adjustment.

Part replaced ( $\square$ )	Adjustment ( $\square$ )
IC301, PM501, D501, R565, R512, R322	R322
IC601, IC301, PM501, D501, D321, C565, C563, R565, R512, R325, R324, T504, DY	R324

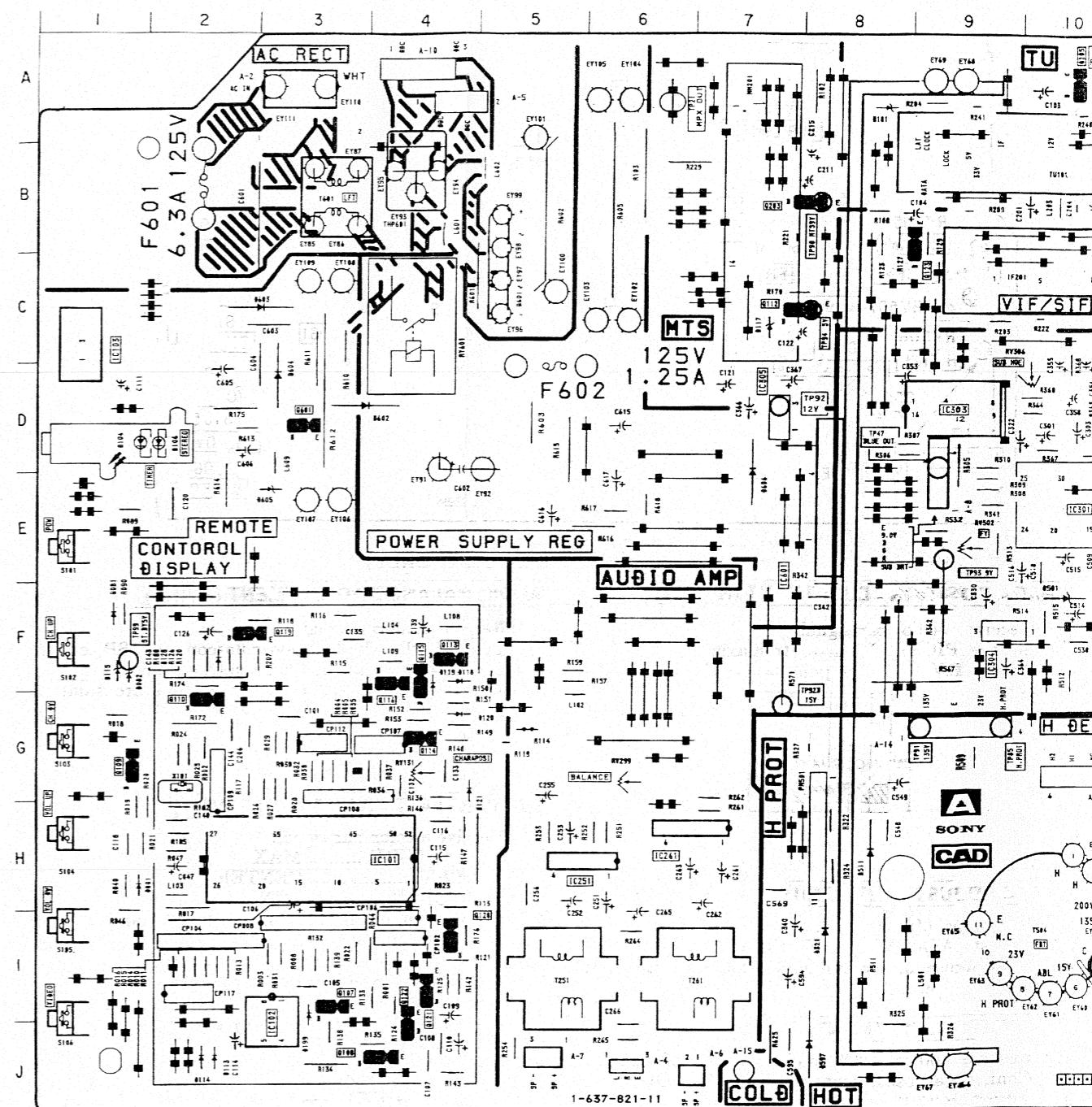
#### Reference information

RESISTOR	RN : METAL FILM RC : SOLID FPRD : NONFLAMMABLE CARBON FUSE : NONFLAMMABLE FUSIBLE RS : NONFLAMMABLE METAL OXIDE RB : NONFLAMMABLE CEMENT RW : NONFLAMMABLE WIREWOUND ※ : ADJUSTMENT RESISTOR LF-8L : MICRO INDUCTOR
COIL	TA : TANTALUM
CAPACITOR	PS : STYROL PP : POLYPROPYLENE PT : MYLAR MPS : METALIZED POLYESTER MPP : METALIZED POLYPROPYLENE ALB : BIPOLAR ALT : HIGH TEMPERATURE ALR : HIGH RIPPLE

- Readings are taken with a color-bar signal input.  
MODE(AUDIO)
  - No mark : MAIN
  - ( ) : SAP
  - < > : MONO
- Readings are taken with a 10 M $\Omega$  digital multimeter.
- Voltage are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- Circled numbers are waveform references.
  - B+ bus
  - signal path

A (TUNER VIF, SIF, CHROMA, AF OUT, Y AMP, CUSTOMER CONTROL, REMOTE CONTROL, TUNING CONTROL, H.DEF, V.DE

#### —A Board—

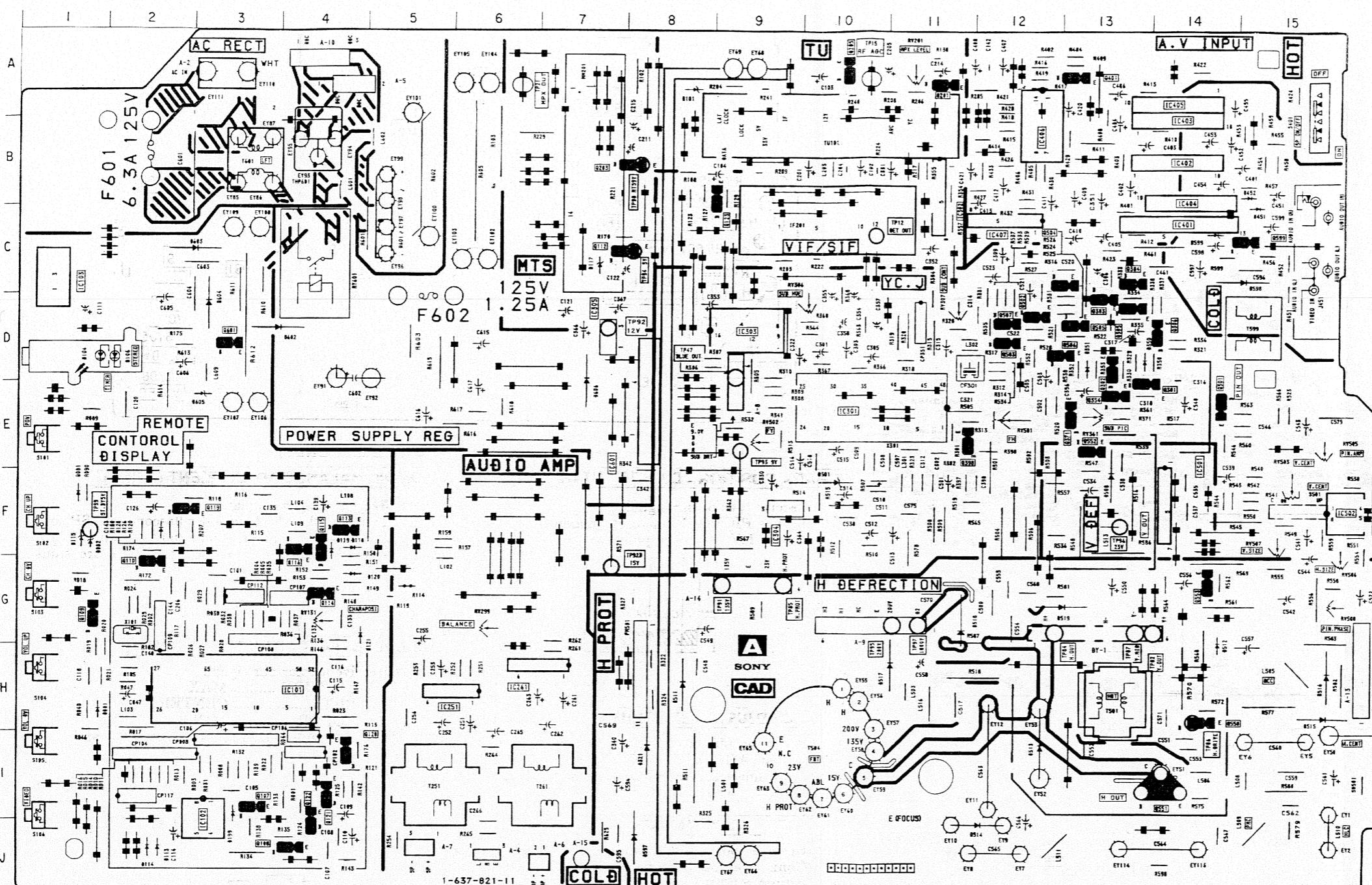


NOTI  
The c  
600 v  
inspe

**A**

(TUNER VIF, SIF, CHROMA, AF OUT, Y AMP, CUSTOMER CONTROL, REMOTE CONTROL, TUNING CONTROL, H.DEF, V.DEF, POWER SUPPLY)

in this manual have been  
set in order to satisfy  
tion. Should replacement be  
re originally used.  
indicated by **█** mark the  
. If results do not meet the  
ponent identified by **█** and  
specified value is achieved.  
page 15)  
table, be sure to perform the

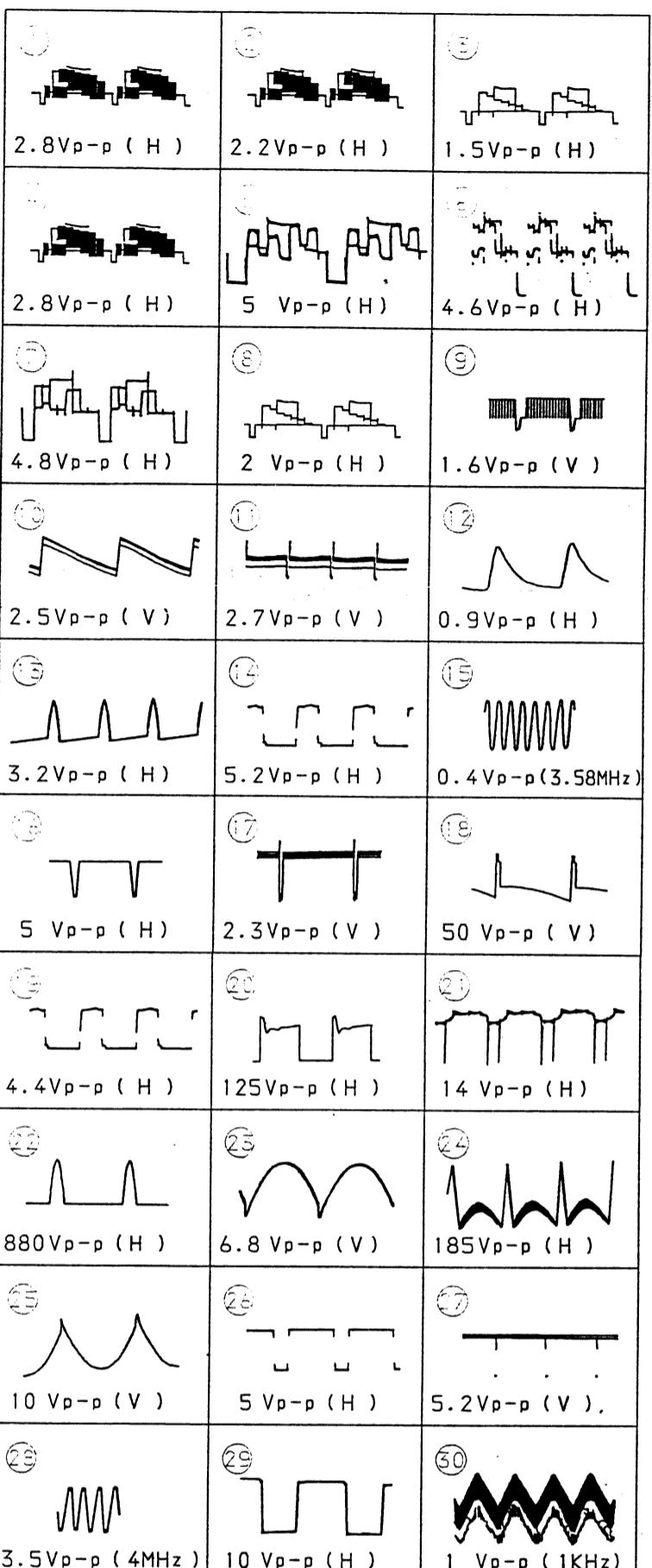
**— A Board —****A BOARD LOCATION**

<b>IC</b>	Q501	E-14	Ø603	C-3
IC101	Q502	Ø-12	Ø604	Ø-3
IC102	Q503	Ø-12	Ø605	E-3
IC103	Q504	C-13	Ø606	E-7
IC251	Q505	Ø-13		
IC261	Q506	Ø-13		
IC301	Q507	Ø-12		
IC302	Q550	H-14		
IC303	Q551	I-14		
IC304	Q552	E-13		
IC305	Q553	G-14		
IC401	Q599	C-15		
IC402	Q601	Ø-3		
IC403				
IC404				
IC405				
IC406				
IC407				
IC501				
IC502				
IC601				
MM201				
<b>DIODE</b>				
Ø001		H-1		
Ø081		F-1		
Ø082		F-1		
Ø101		A-1		
Ø104		Ø-1		
Ø106		Ø-2		
Ø113		J-2		
Ø114		J-2		
Ø115		F-1		
Ø117		C-7		
Ø118		F-4		
<b>TRANSISTOR</b>				
Q107	I-1			
Q108	J-4			
Q109	G-1			
Q110	G-2			
Q112	C-7			
Q113	F-4			
Q114	G-4			
Q115	F-4			
Q116	F-4			
Q119	I-3			
Q121	I-4			
Q122	J-4			
Q123	B-9			
Q201	A-11			
Q203	B-8			
Q205	A-10			
Q301	E-14			
Q302	Ø-13			
Q303	Ø-13			
Q304	C-13			
Q305	Ø-13			
Q306	Ø-14			
Q354	E-13			
Q371	E-13			
Q398	E-11			
Q401	A-13			
<b>TEST POINT</b>				
TP12	C-10			
TP15	A-10			
TP21	A-6			
TP47	D-9			
TP82	G-14			
TP84	G-13			
TP85	G-9			
TP86	H-14			
TP87	G-13			
TP91	G-9			
TP92	D-7			
TP92B	G-7			
TP93	E-9			
TP94	C-8			
TP95	G-11			
TP96	F-13			
TP97	G-11			
TP98	B-8			
TP99	F-1			

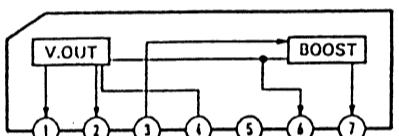
**NOTE:**

The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

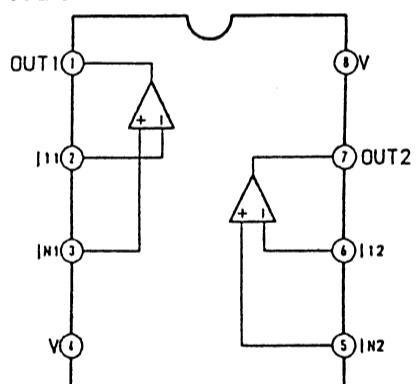
### A BOARD WAVEFORM



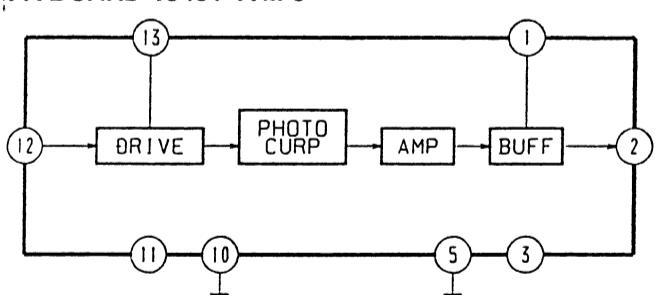
• A BOARD IC501 uPC1378H-P



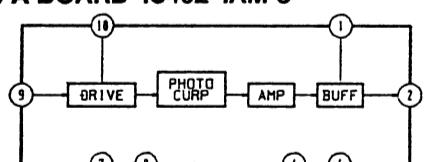
• A BOARD IC502 uRC4558P



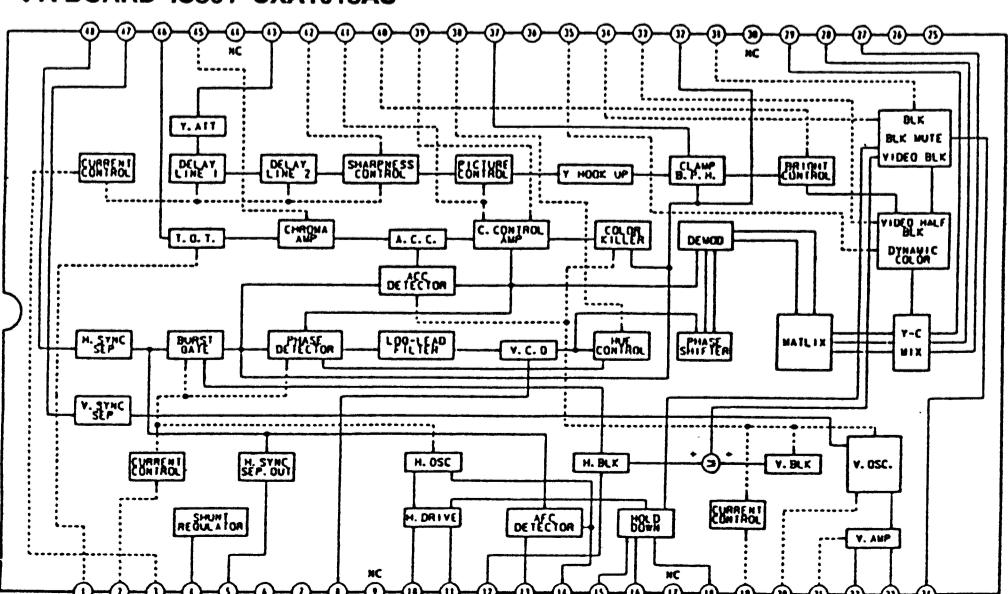
• A BOARD IC401 IVM-3



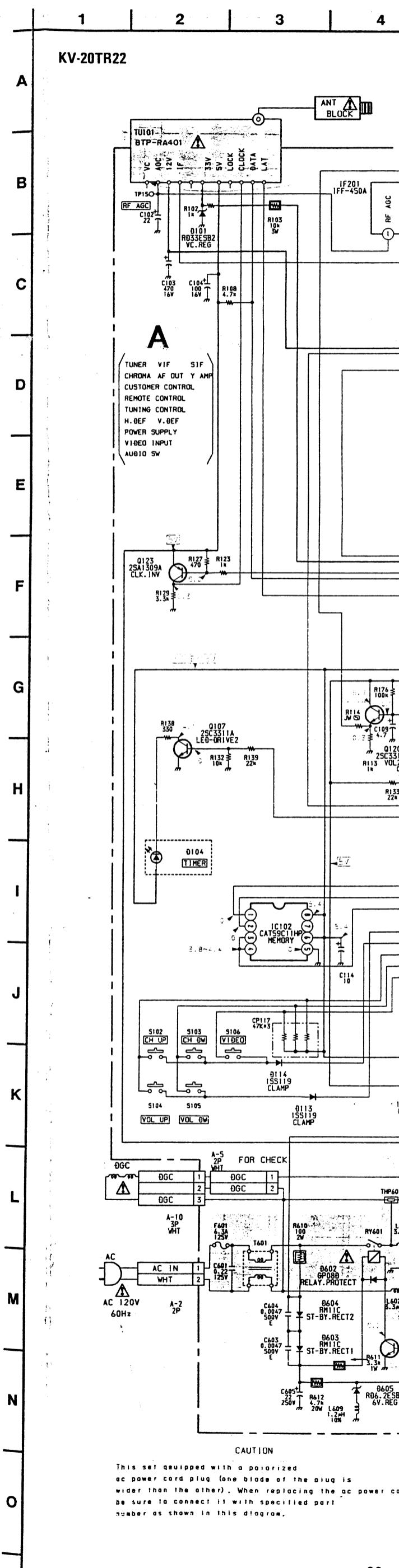
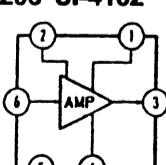
• A BOARD IC402 IAM-3



• A BOARD IC301 CXA1013AS



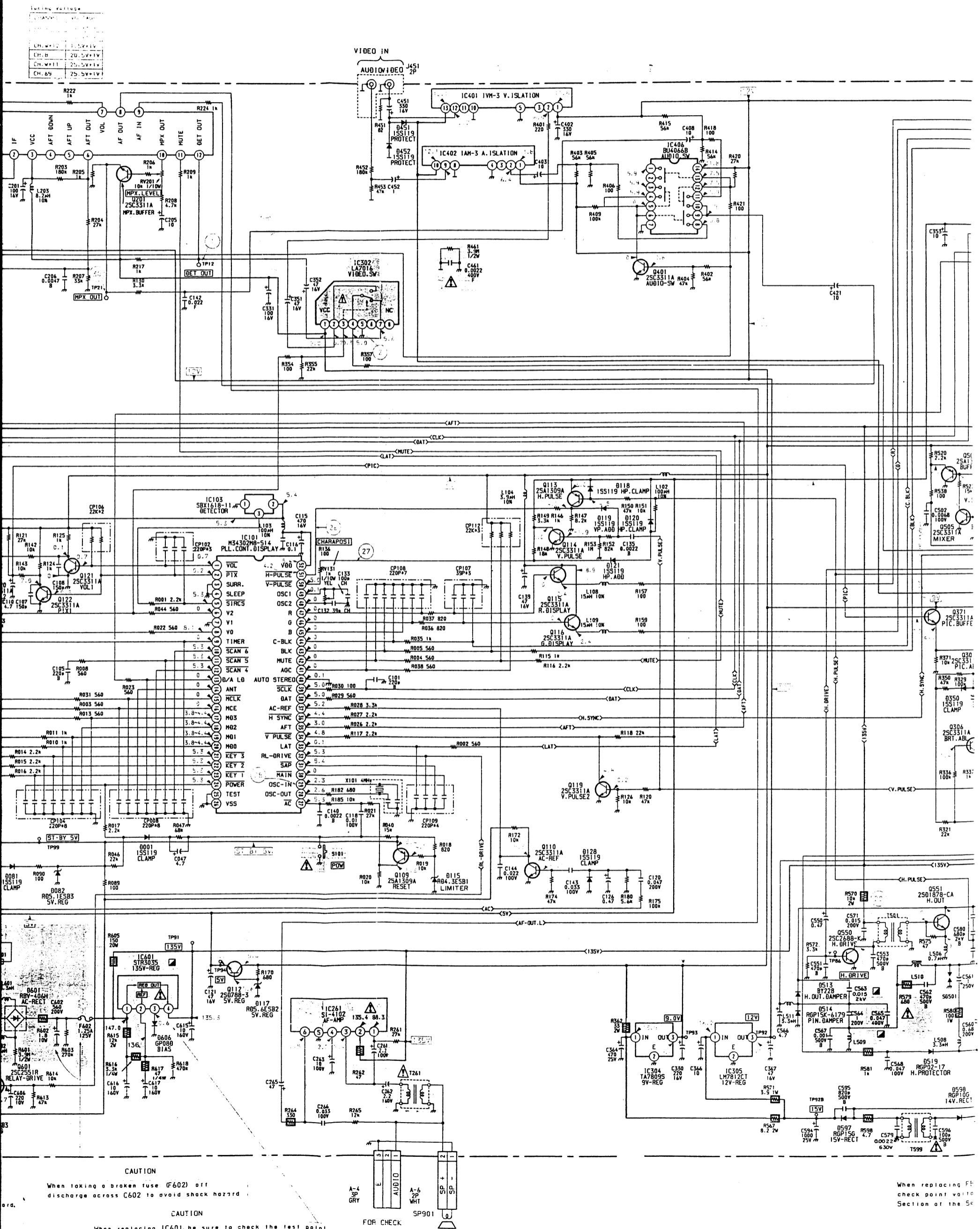
• A BOARD  
IC206 SI-4102

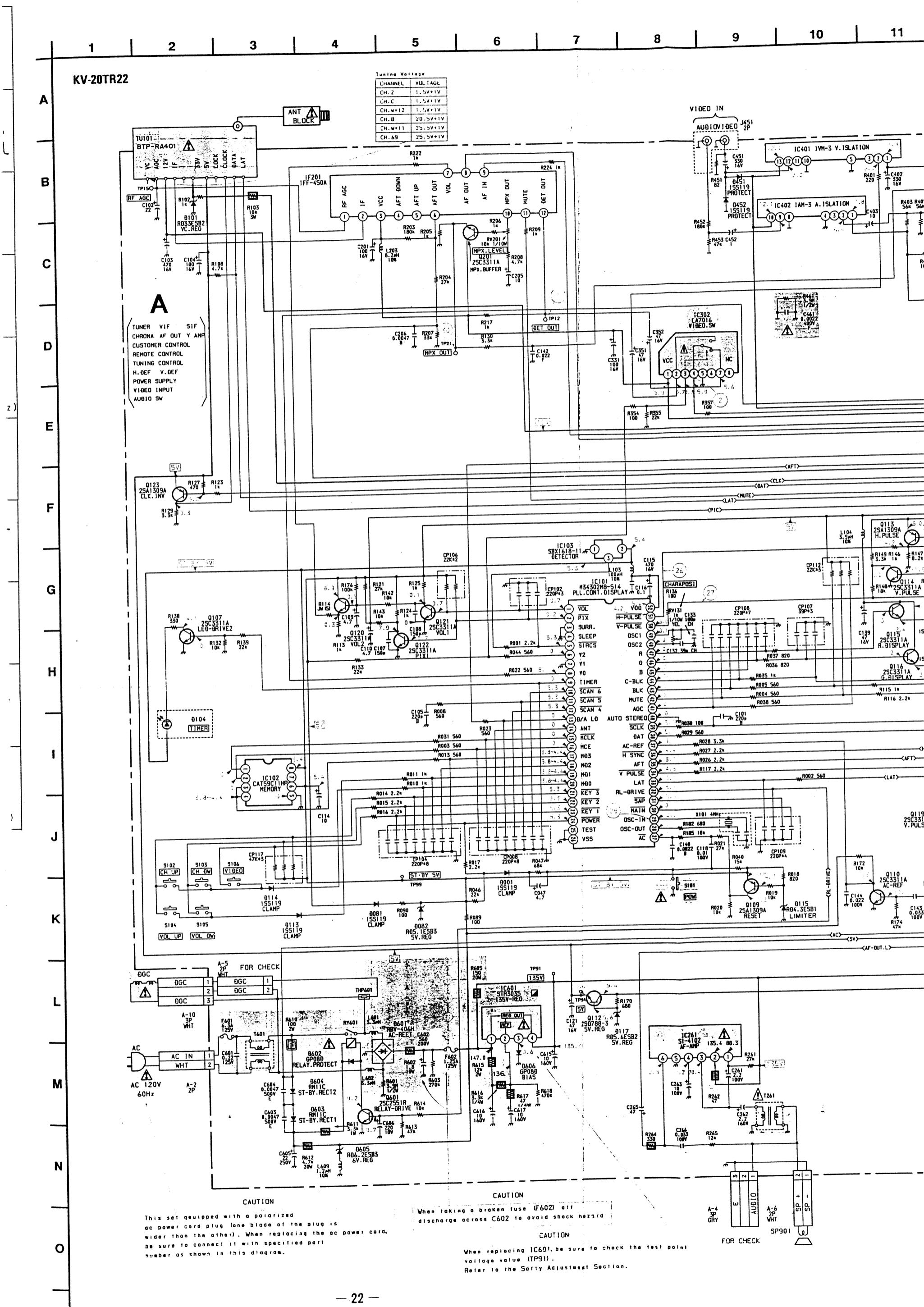


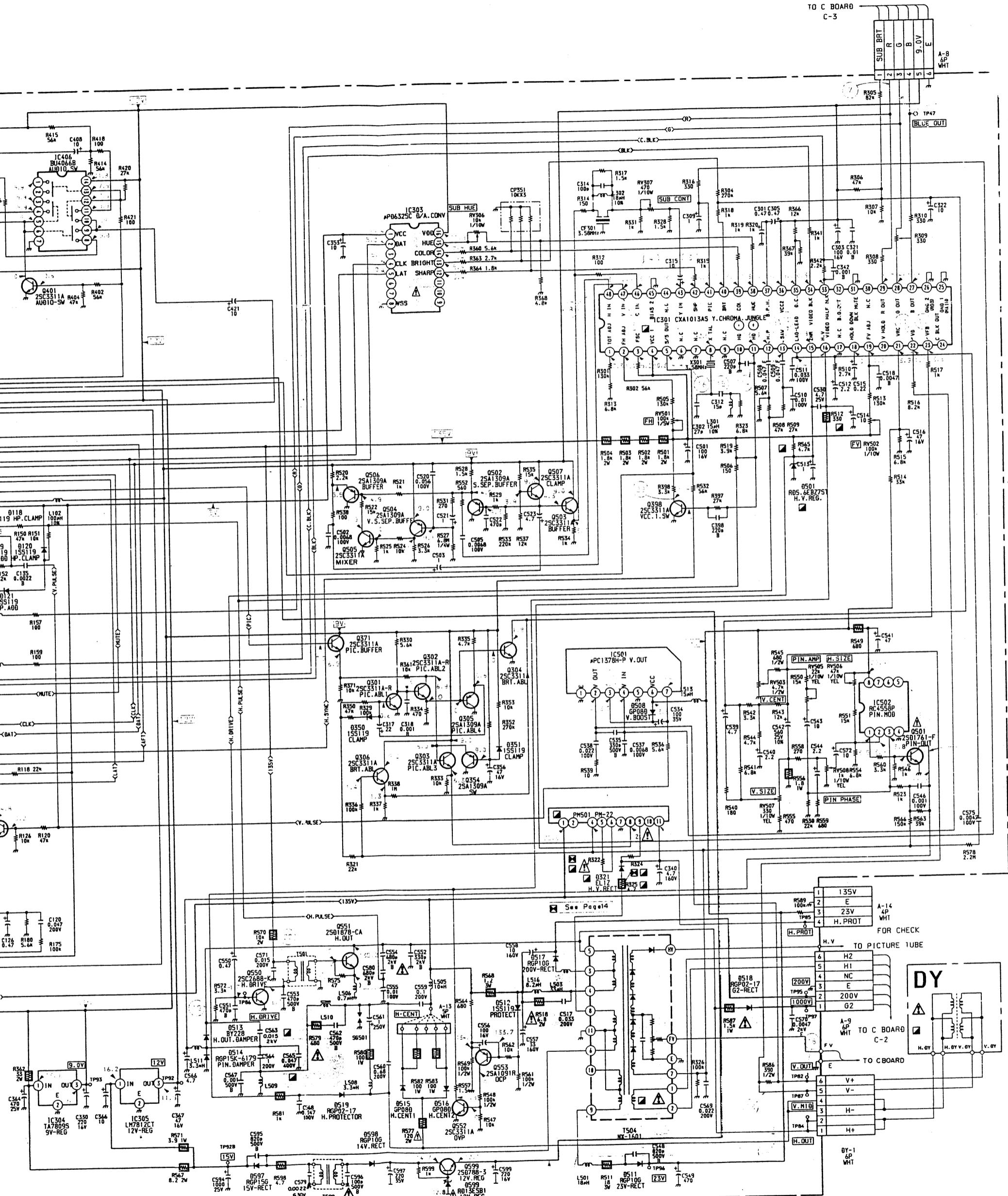
#### CAUTION

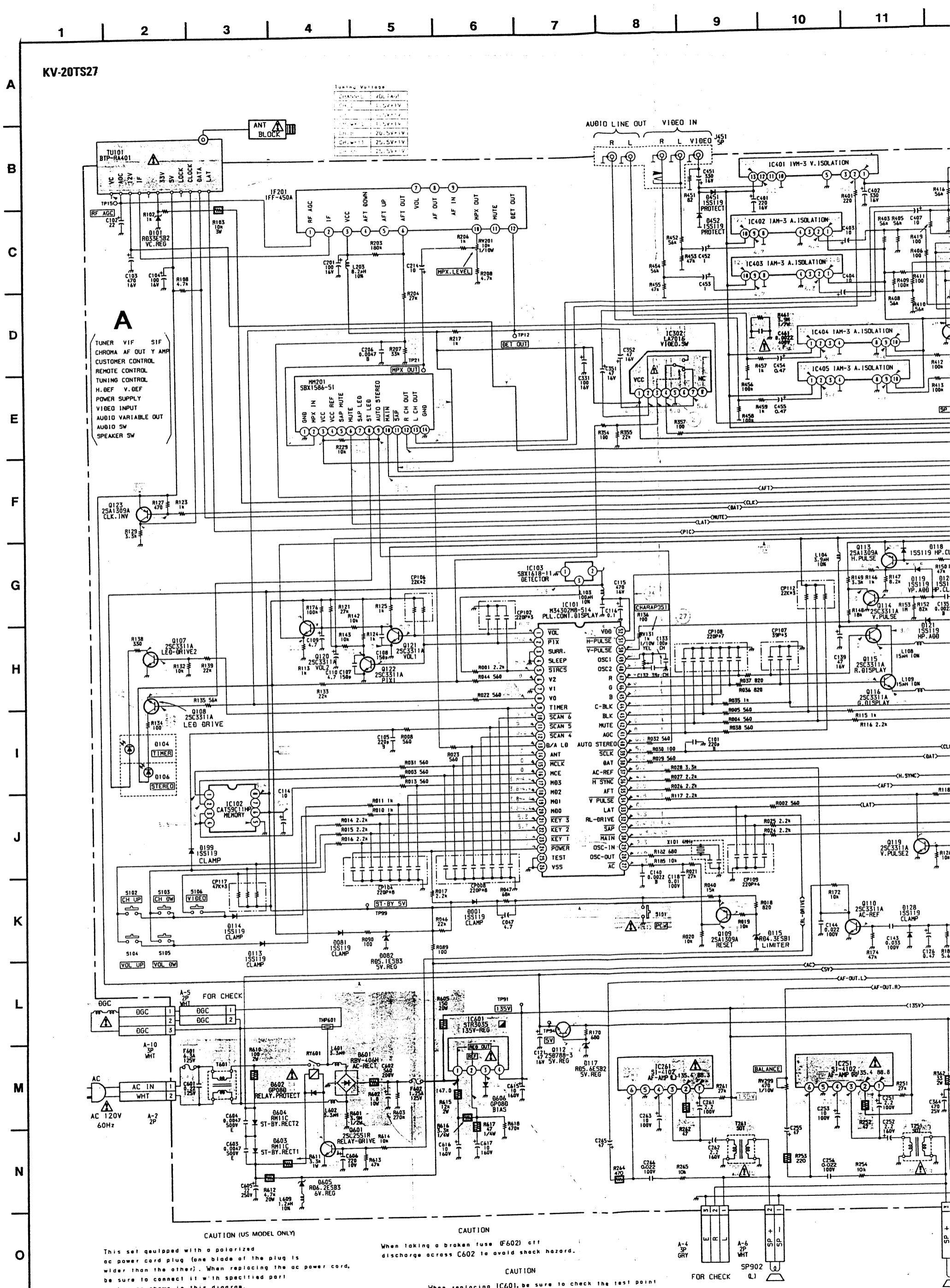
This set equipped with a polarized ac power cord plug (one blade of the plug is wider than the other). When replacing the ac power cord, be sure to connect it with specified part number as shown in this diagram.

5 6 7 8 9 10 11 12 13 14 15









CAUTION (US MODEL ONLY)

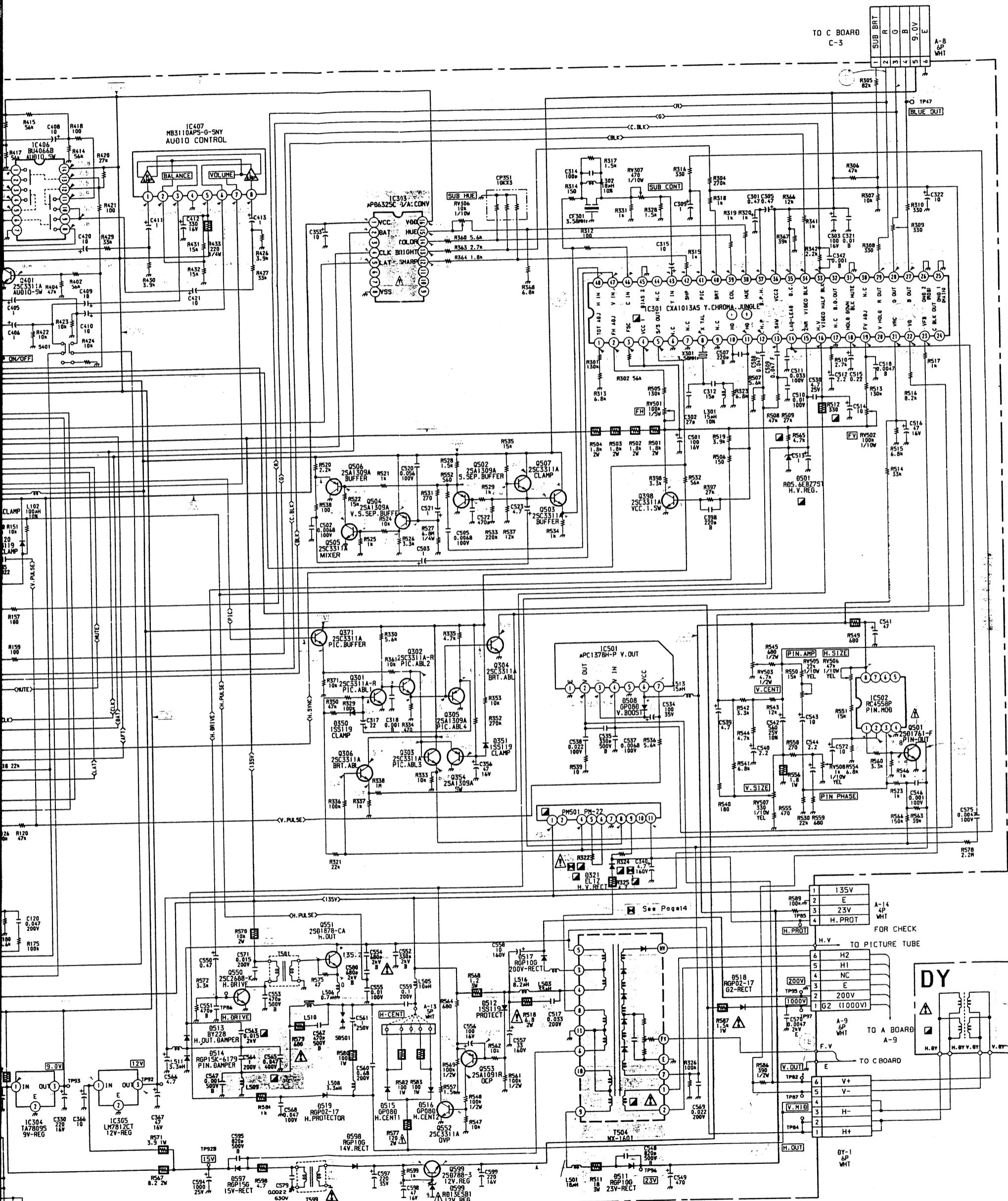
This set equipped with a polarized ac power cord plug (one blade of the plug is wider than the other). When replacing the ac power cord, be sure to connect it with specified part number as shown in this diagram.

**CAUTION**

When taking a broken fuse (F602) off discharge across C602 to avoid shock hazard.

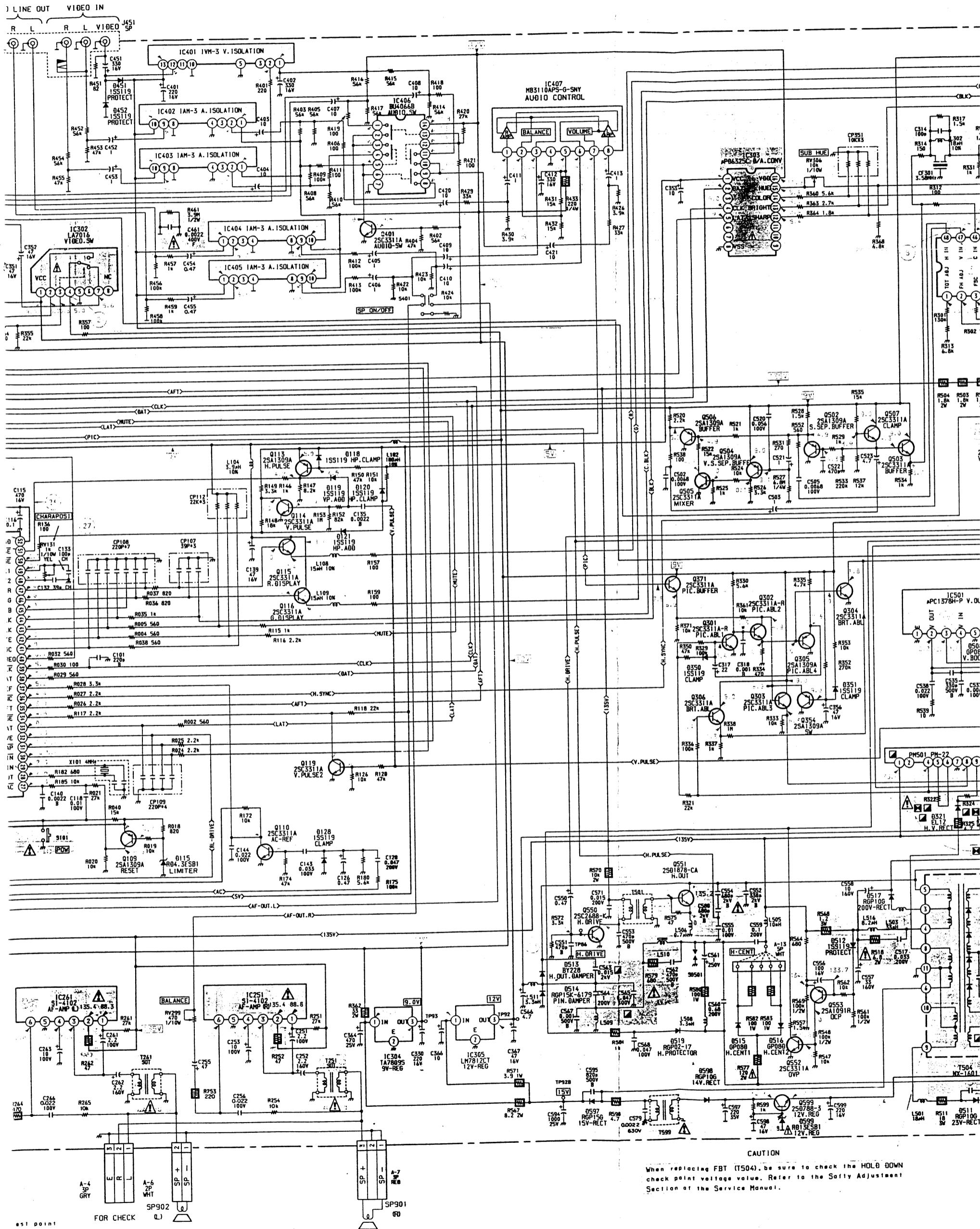
**CAUTION**  
When replacing IC601, be sure to check the test point voltage value (TP91).  
Do not touch the Safety Adjustment Section.

FOR CHECK

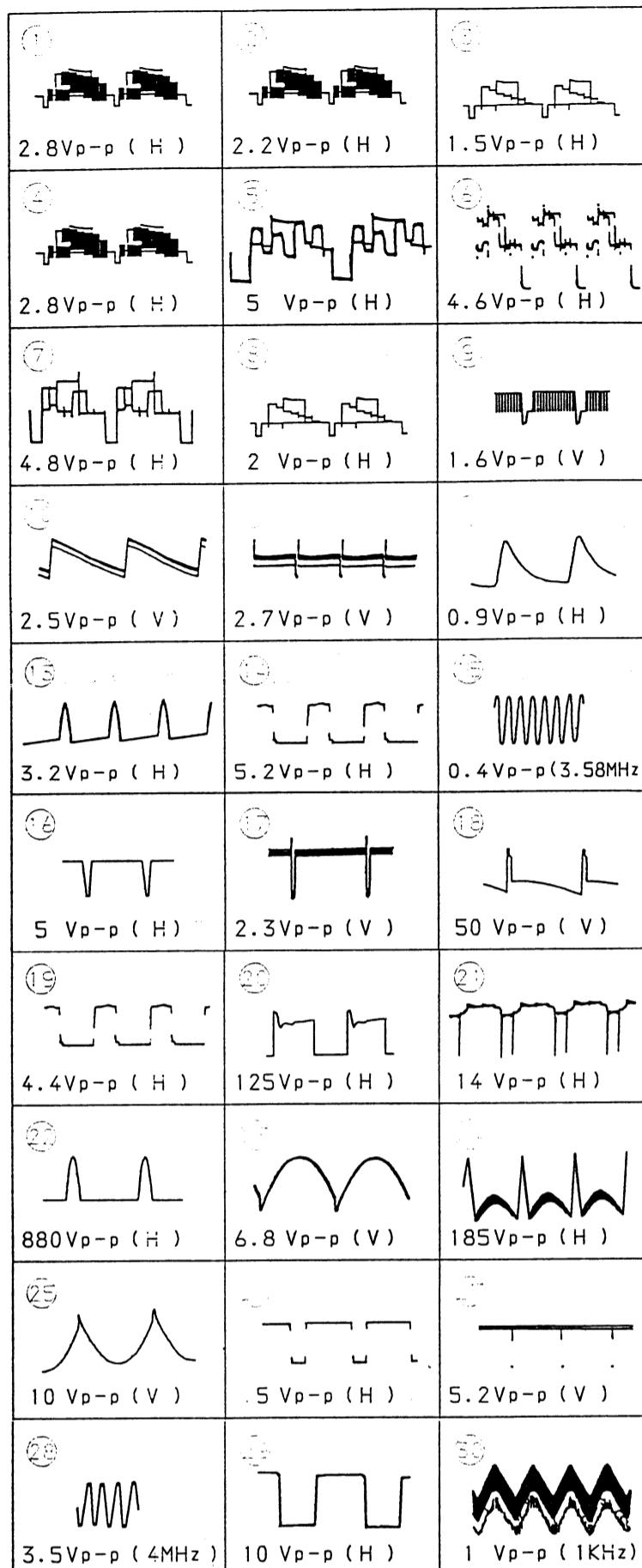
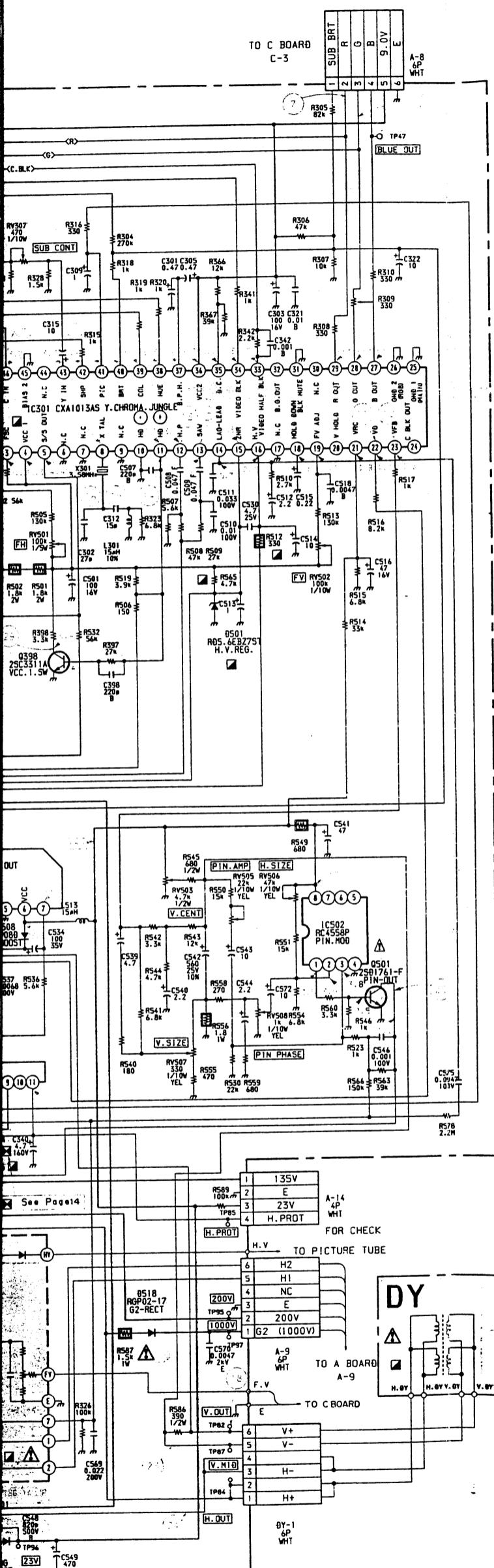


**CAUTION**

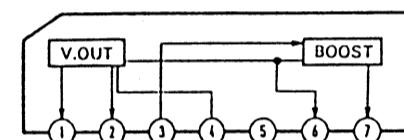
When replacing FBT (T504), be sure to check the HOLD DOWN check point voltage value. Refer to the Safety Adjustment Section of the Service Manual.



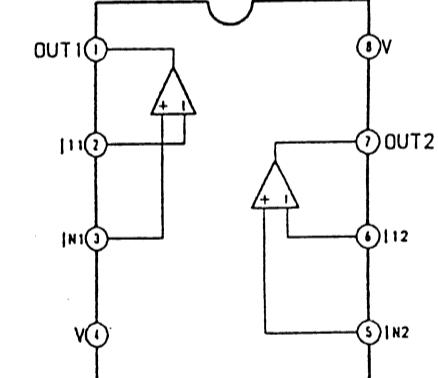
19 | 20 | 21 | 22 | 23



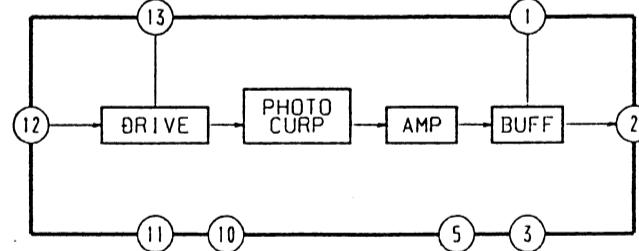
• A BOARD IC501 uPC1378H-P



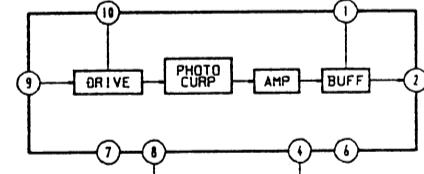
• A BOARD IC502 uRC4558P



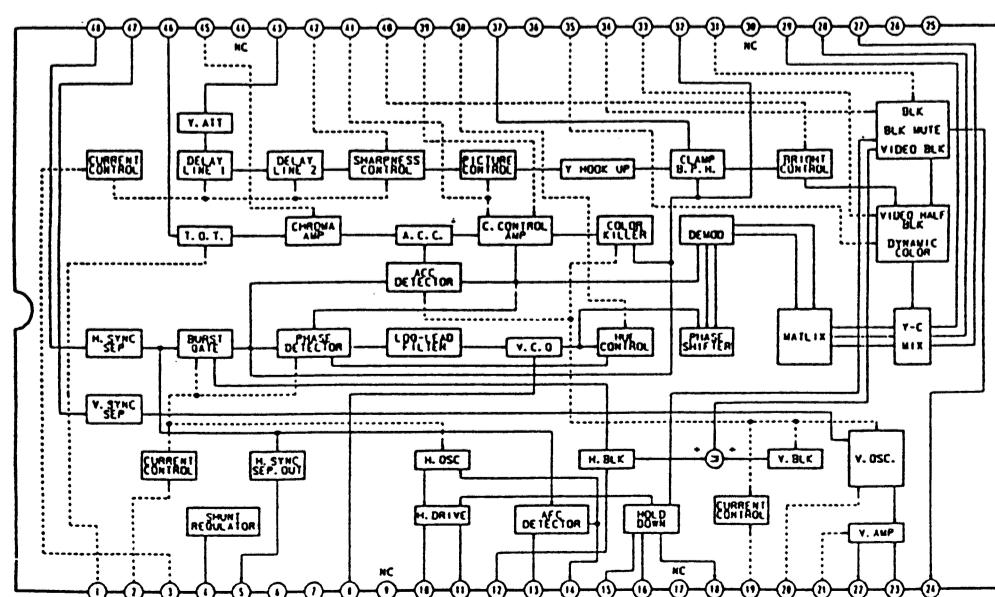
• A BOARD IC401 IVM-3



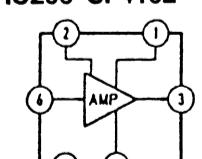
• A BOARD IC402 IAM-3



- A BOARD IC301 CXA1013AS

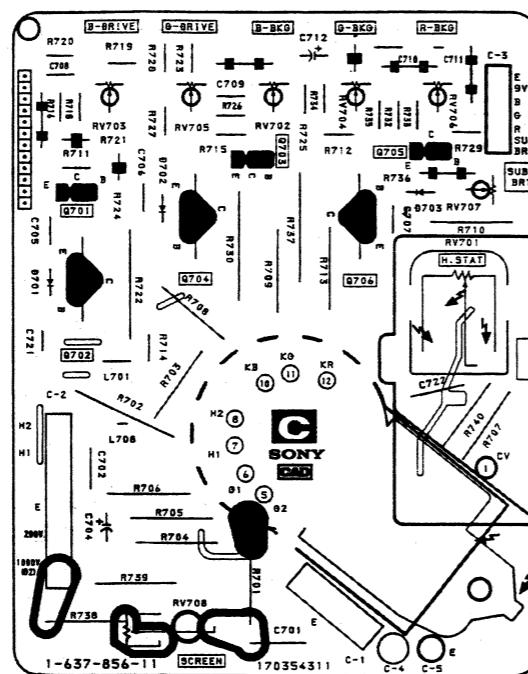


• A BOARD  
IC306 SI-4102



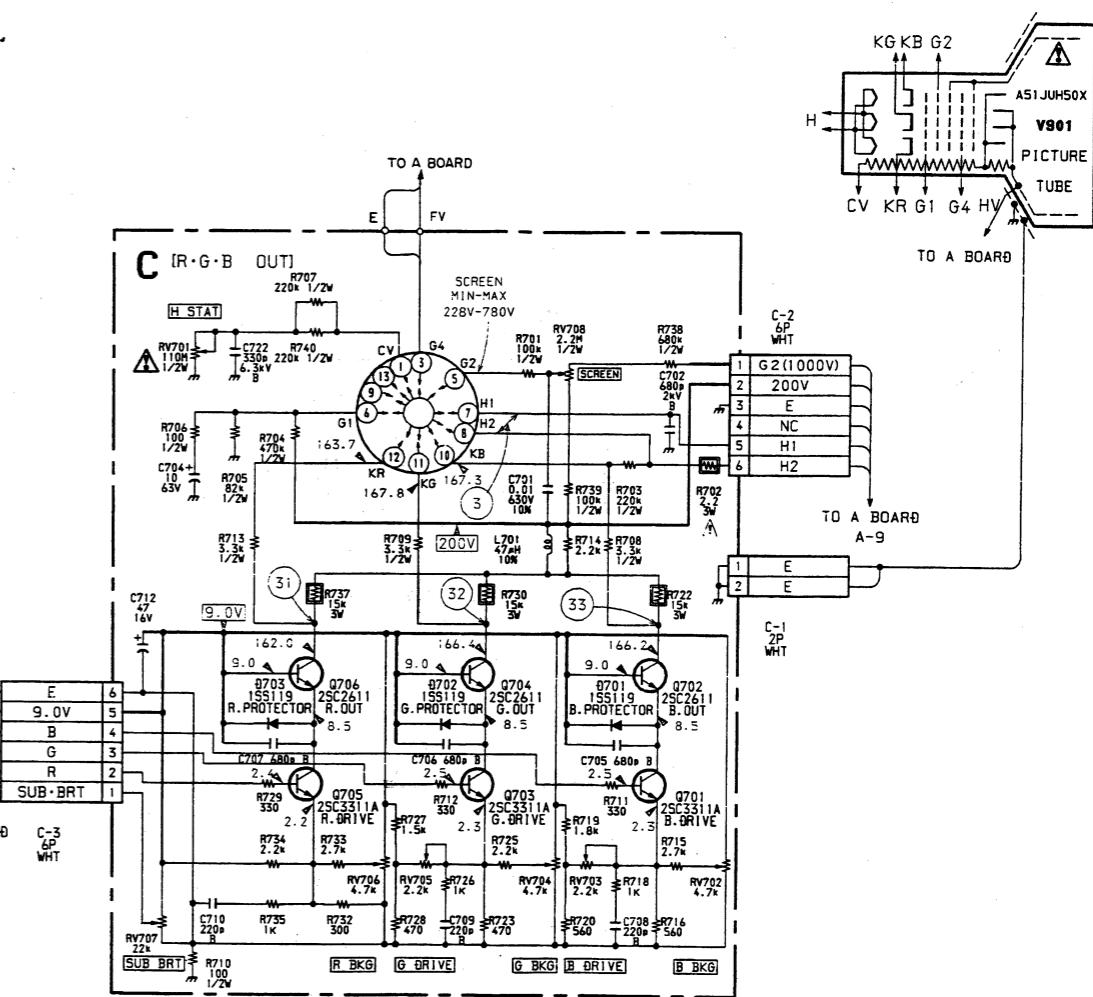
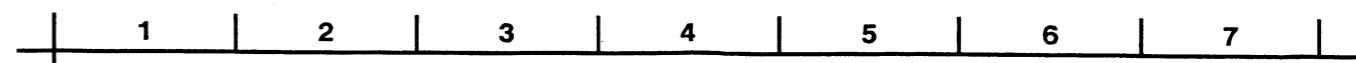
**C** (R.G.B OUT)

— C Board —

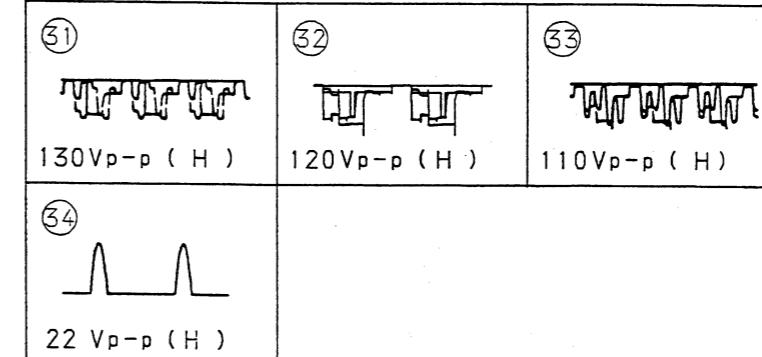


NOTE

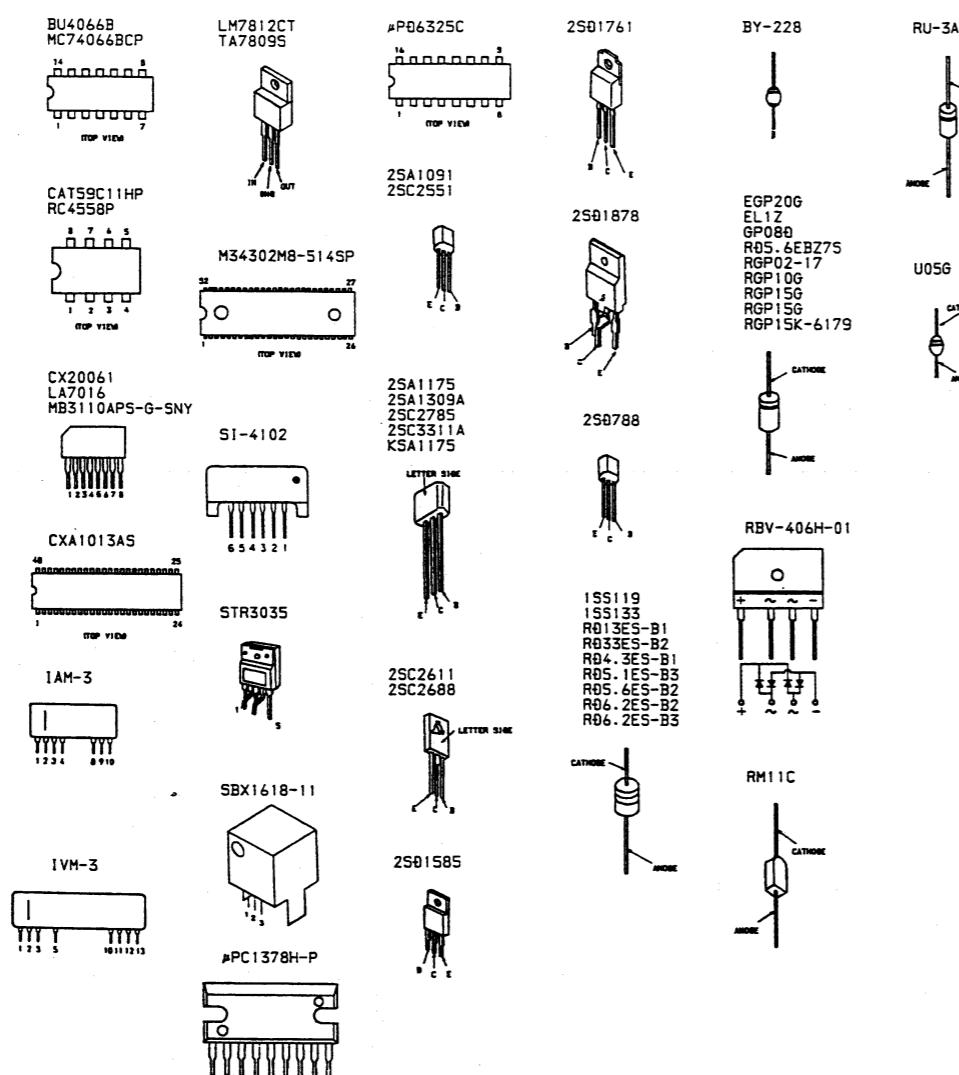
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.



C BOARD WAVEFORM



## 6-3. SEMICONDUCTORS



## NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

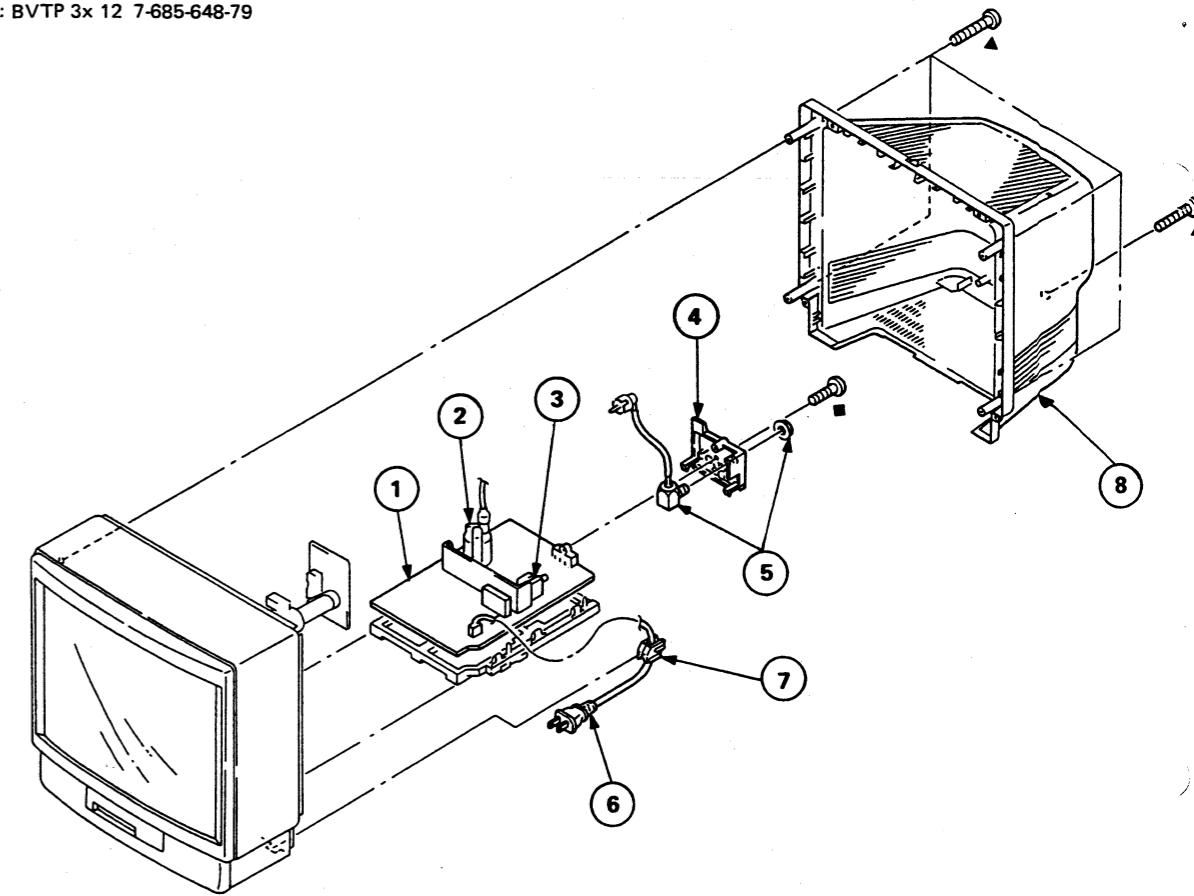
SECTION 7  
EXPLODED VIEWS

The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

## 7-1. CHASSIS

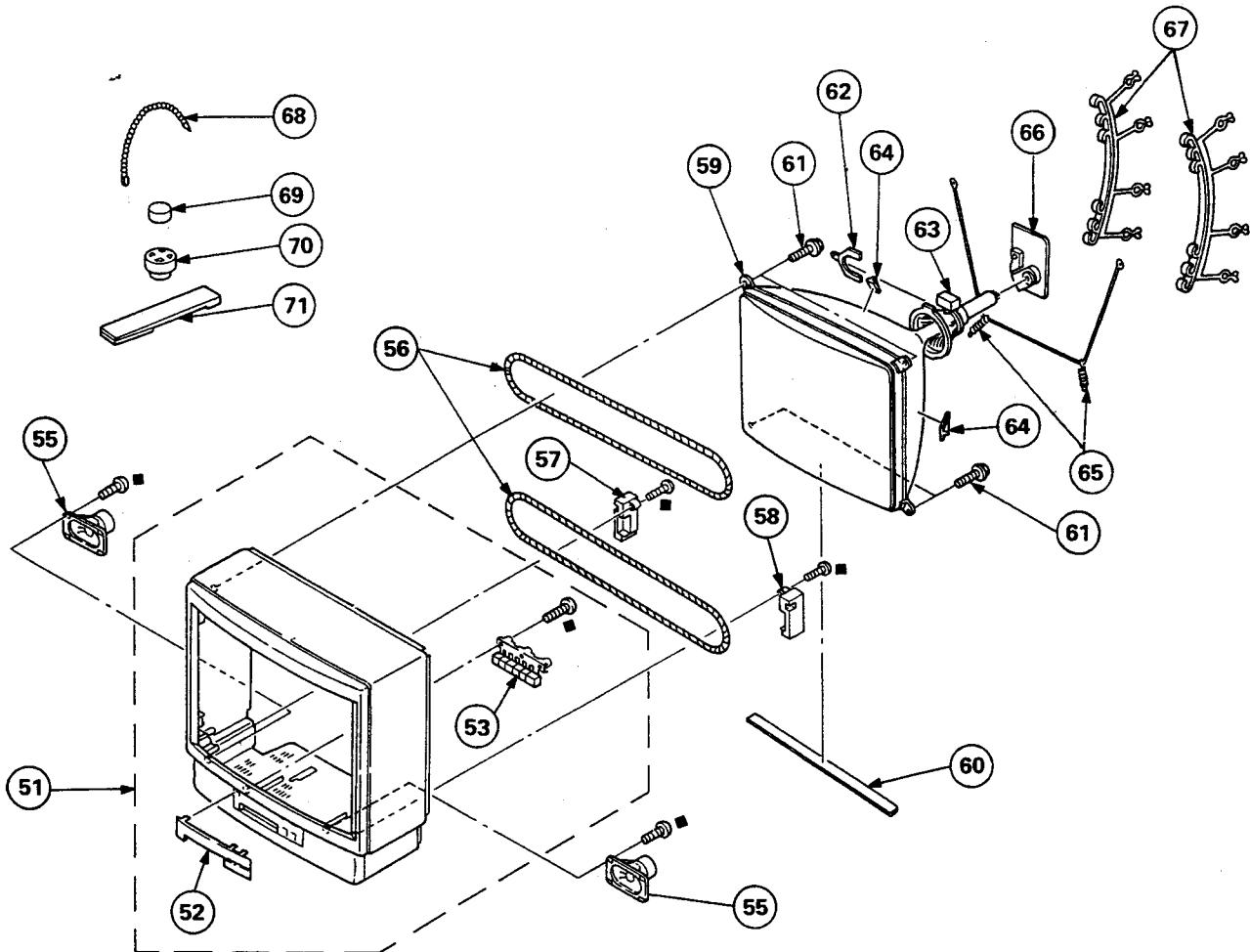
- ▲ : BVTP 4x 16 7-685-663-79  
■ : BVTP 3x 12 7-685-648-79



REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
1	*A-1296-821-A	A BOARD, COMPLETE (KV-20TR22(U) ONLY)		4	4-031-082-01	TERMINAL BOARD, ANTENNA (KV-20TS27 (U/C) ONLY)	
	*A-1296-822-A	A BOARD, COMPLETE (KV-20TS27(U) ONLY)		5	4-031-082-11	TERMINAL BOARD, ANTENNA (KV-20TR22 (U) ONLY)	
	*A-1296-854-A	A BOARD, COMPLETE (KV-20TS27(C) ONLY)		2	△ 1-439-416-41	TRANSFORMER ASSY, FLYBACK (NX-1604)	△ 1-536-678-31
	3	△ 1-465-371-11 TUNER, ET (BTP-RA401) (KV-20TR22(U), KV-20TS27(U) ONLY)		6	△ 1-537-077-21	ANTENNA BLOCK (KV-20TR22(U), KV-20TS27(C) ONLY)	
		△ 1-465-371-21 TUNER, ET (BTP-RA401) (KV-20TS27(C) ONLY)		7	△ 1-590-492-11	CORD, POWER (WITH CONNECTOR)	
				8	△ 4-388-328-01	GROMMET, AC CORD	
					4-031-087-01	COVER, REAR	

## 7-2. PICTURE TUBE

■ : BVTP 3x12 7-685-648-79



The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
51	X-4029-435-1	CABINET ASSY (WITH BEZEL ASSY) (KV-20TR22(U) ONLY)	52, 53	61	4-307-249-00	SCREW (5), TAPPING	
	X-4029-438-1	CABINET ASSY (WITH BEZEL ASSY) (KV-20TS27(U/C) ONLY)	52, 53	62	1-452-277-00	MAGNET, BNC	
52	X-4029-607-1	PANEL ASSY, CONTROL (KV-20TR22 (U) ONLY)		63	$\Delta$ 1-451-268-11	DEFLECTION YOKE (Y21PXA)	
	X-4029-606-1	PANEL ASSY, CONTROL (KV-20TS27 (U/C) ONLY)		64	3-704-495-01	SPACER, DY	
53	X-4029-436-1	BUTTON ASSY, MULTI		65	4-375-394-01	SPRING, TENSION	
55	1-544-283-11	SPEAKER		66	$\Delta$ A-1331-126-A	C BOARD, COMPLETE	
56	$\Delta$ 1-426-358-11	COIL, DEMAGNETIZATION		67	*4-341-778-21	BAND, DEGAUSSING COIL	
57	4-031-079-01	SUPPORT (LEFT), PICTURE TUBE		68	4-308-870-00	CLIP, LEAD WIRE	
58	4-031-078-01	SUPPORT (RIGHT), PICTURE TUBE		69	1-452-032-00	MAGNET, DISK; 10MM $\phi$	
59	$\Delta$ 8-738-752-05	PICTURE TUBE (A51JUH50X)		70	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM $\phi$	
60	4-385-725-01	SHEET, BLOTTING		71	X-4308-815-0	PERMALLOY ASSY, CONVERGENCE	

**A**

## NOTE:

The components identified by shading and mark **A** are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

## SECTION 8

### ELECTRICAL PARTS LIST

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

## RESISTORS

- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

## CAPACITORS

## COILS

MF :  $\mu\text{F}$ , PF :  $\mu\mu\text{F}$  MMH : mH, UH :  $\mu\text{H}$

- The components identified by **B** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- There are some cases the reference number on one board overlaps on the other board. Therefore, when ordering parts by the reference number, please include the board name.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
*A-1296-822-A	A BOARD, COMPLETE (KV-20TS27(U) ONLY)			C139	1-124-477-11	ELECT	47MF 20% 16V
*****	*****			C140	1-102-121-00	CERAMIC	0.0022MF 10% 50V
*A-1296-854-A	A BOARD, COMPLETE (KV-20TS27(C) ONLY)			C143	1-106-379-12	MYLAR	0.033MF 10% 100V
*****	*****			C144	1-106-375-12	MYLAR	0.022MF 10% 100V
*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P			C201	1-126-101-11	ELECT	100MF 20% 16V
*1-508-766-00	PIN, CONNECTOR (5MM PITCH) 4P			C206	1-102-125-00	CERAMIC	0.0047MF 10% 50V
*1-508-767-00	PIN, CONNECTOR (5MM PITCH) 5P			C214	1-124-907-11	ELECT	10MF 20% 50V
*1-508-768-00	PIN, CONNECTOR (5MM PITCH) 6P			C251	1-124-925-11	ELECT	2.2MF 20% 100V
*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P			C252	1-124-799-11	ELECT	2.2MF 20% 160V
1-533-223-11	CLIP, FUSE			C253	1-124-667-11	ELECT	10MF 20% 100V
*1-559-991-21	CONNECTOR ASSY 1P			C255	1-124-910-11	ELECT	47MF 20% 50V
*1-560-123-00	PLUG, CONNECTOR (2.5MM) 3P			C256	1-106-375-12	MYLAR	0.022MF 10% 100V
*1-564-505-11	PLUG, CONNECTOR 2P			C261	1-124-925-11	ELECT	2.2MF 20% 100V
*1-564-506-11	PLUG, CONNECTOR 3P			C262	1-124-799-11	ELECT	2.2MF 20% 160V
*1-564-509-11	PLUG, CONNECTOR 6P			C263	1-124-667-11	ELECT	10MF 20% 100V
*1-568-536-11	PLUG (MINIATURE DY) 6P			C265	1-124-910-11	ELECT	47MF 20% 50V
*1-580-843-11	PIN, CONNECTOR (POWER)			C266	1-106-375-12	MYLAR	0.022MF 10% 100V
*4-341-751-01	EYELET (EY1, EY2, EY5, EY6, EY7, EY8, EY9, EY10, EY11, EY12, EY85, EY86, EY87, EY88, EY93, EY94, EY95, EY96, EY97, EY98, EY99, EY113, EY114)			C301	1-124-902-00	ELECT	0.47MF 20% 50V
*4-341-752-01	EYELET (EY50, EY51, EY52, EY53, EY55, EY56, EY57, EY58, EY59, EY60, EY61, EY62, EY63, EY65, EY66, EY67, EY68, EY69, EY91, EY92, EY100, EY101, EY102, EY103, EY104, EY105, EY106, EY107, EY108, EY109, EY110, EY111)			C302	1-164-056-11	CERAMIC	27PF 5% 50V
*4-363-404-00	HOLDER, IC			C303	1-126-101-11	ELECT	100MF 20% 16V
4-369-267-01	SPACER, MICA			C305	1-124-902-00	ELECT	0.47MF 20% 50V
<CAPACITOR>							
C047	1-124-927-11	ELECT	4.7MF 20% 50V	C317	1-126-233-11	ELECT	22MF 20% 5V
C101	1-164-077-11	CERAMIC	220PF 10% 50V	C318	1-102-074-00	CERAMIC	0.001MF 10% 5V
C102	1-126-233-11	ELECT	22MF 20% 50V	C321	1-102-129-00	CERAMIC	0.01MF 10% 5V
C103	1-126-103-11	ELECT	470MF 20% 16V	C322	1-124-907-11	ELECT	10MF 20% 5V
C104	1-126-101-11	ELECT	100MF 20% 16V	C323	1-124-120-11	ELECT	220MF 20% 1V
C105	1-164-077-11	CERAMIC	220PF 10% 50V	C331	1-126-101-11	ELECT	100MF 20% 1V
C107	1-101-361-00	CERAMIC	150PF 5% 50V	C340	1-123-932-00	ELECT	4.7MF 20% 10V
C108	1-101-361-00	CERAMIC	150PF 5% 50V	C342	1-102-074-00	CERAMIC	0.001MF 10% 5V
C109	1-124-927-11	ELECT	4.7MF 20% 50V	C351	1-124-477-11	ELECT	47MF 20% 1V
C110	1-124-927-11	ELECT	4.7MF 20% 50V	C352	1-124-477-11	ELECT	47MF 20% 1V
C114	1-124-907-11	ELECT	10MF 20% 50V	C353	1-124-907-11	ELECT	10MF 20% 5V
C115	1-126-103-11	ELECT	470MF 20% 16V	C356	1-124-477-11	ELECT	47MF 20% 1V
C116	1-136-165-00	FILM	0.1MF 5% 50V	C364	1-124-480-11	ELECT	470MF 20% 2V
C118	1-106-367-00	MYLAR	0.01MF 10% 100V	C366	1-124-907-11	ELECT	10MF 20% 5V
C120	1-106-383-00	MYLAR	0.047MF 200V	C367	1-124-477-11	ELECT	47MF 20% 1V
C121	1-124-477-11	ELECT	47MF 20% 16V	C398	1-164-077-11	CERAMIC	220PF 10% 5V
C126	1-124-902-00	ELECT	0.47MF 20% 50V	C401	1-124-120-11	ELECT	220MF 20% 1V
C132	1-164-033-11	CERAMIC	39PF 5% 50V	C402	1-124-119-00	ELECT	330MF 20% 1V
C133	1-102-973-00	CERAMIC	100PF 5% 50V	C403	1-124-907-11	ELECT	10MF 20% 5V
C135	1-102-121-00	CERAMIC	0.0022MF 10% 50V	C404	1-124-907-11	ELECT	10MF 20% 5V
C122	1-124-477-11	ELECT	47MF 20% 16V	C405	1-124-903-11	ELECT	1MF 20% 5V
C406	1-124-903-11	ELECT	1MF 20% 5V	C407	1-124-907-11	ELECT	10MF 20% 5V
C408	1-124-907-11	ELECT	10MF 20% 5V	C409	1-124-907-11	ELECT	10MF 20% 5V

The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

A

REF. NO.	PART NO.	DESCRIPTION			REMARK	REF. NO.	PART NO.	DESCRIPTION		REMARK		
C410	1-124-907-11	ELECT	10MF	20%	50V	C568 $\Delta$	1-106-383-00	MYLAR	0.047MF	10%	100V	
C411	1-124-903-11	ELECT	1MF	20%	50V	C569	1-106-375-12	MYLAR	0.022MF	200V		
C412	1-124-119-00	ELECT	330MF	20%	16V	C570	1-162-114-00	CERAMIC	0.0047MF	2KV		
C413	1-124-903-11	ELECT	1MF	20%	50V	C571	1-106-371-00	MYLAR	0.015MF	200V		
C420	1-124-907-11	ELECT	10MF	20%	50V	C572	1-124-907-11	ELECT	10MF	20%	50V	
C421	1-124-907-11	ELECT	10MF	20%	50V	C575	1-106-359-00	MYLAR	0.0047MF	10%	100V	
C451	1-124-119-00	ELECT	330MF	20%	16V	C579	1-129-898-00	FILM	0.0022MF	5%	630V	
C452	1-124-903-11	ELECT	1MF	20%	50V	C580	1-162-116-00	CERAMIC	680PF	10%	2KV	
C453	1-124-903-11	ELECT	1MF	20%	50V	C594	1-124-557-11	ELECT	1000MF	20%	25V	
C454	1-124-902-00	ELECT	0.47MF	20%	50V	C595	1-102-212-00	CERAMIC	820PF	10%	500V	
C455	1-124-902-00	ELECT	0.47MF	20%	50V	C596	1-162-117-00	CERAMIC	100PF	10%	500V	
C461 $\Delta$	1-161-742-00	CERAMIC	0.0022MF	20%	400V	C597	1-124-484-11	ELECT	220MF	20%	35V	
C501	1-126-101-11	ELECT	100MF	20%	16V	C598	1-124-477-11	ELECT	47MF	20%	16V	
C502	1-106-363-00	MYLAR	0.0068MF	10%	100V	C599	1-124-120-11	ELECT	220MF	20%	16V	
C503	1-124-903-11	ELECT	1MF	20%	50V	C601 $\Delta$	1-108-745-52	MYLAR	0.22MF	20%	125V	
C505	1-106-363-00	MYLAR	0.0068MF	10%	100V	C602 $\Delta$	1-125-679-31	ELECT	560MF	20%	200V	
C507	1-164-077-11	CERAMIC	220PF	10%	50V	C603	1-161-830-00	CERAMIC	0.0047MF	500V		
C508	1-101-006-00	CERAMIC	0.047MF	50V		C604	1-161-830-00	CERAMIC	0.0047MF	500V		
C509	1-101-006-00	CERAMIC	0.047MF	50V		C605	1-123-948-00	ELECT	22MF	20%	250V	
C510	1-106-367-00	MYLAR	0.01MF	10%	100V	C606	1-126-176-11	ELECT	220MF	20%	10V	
C511	1-106-379-12	MYLAR	0.033MF	10%	100V	C615	1-124-046-00	ELECT	10MF	20%	160V	
C512	1-124-925-11	ELECT	2.2MF	20%	50V	C616	1-124-046-00	ELECT	10MF	20%	160V	
C513	1-124-903-11	ELECT	1MF	20%	50V	C617	1-124-046-00	ELECT	10MF	20%	160V	
C514	1-124-907-11	ELECT	10MF	20%	50V							
C515	1-124-464-11	ELECT	0.22MF	20%	50V							
C516	1-124-477-11	ELECT	47MF	20%	16V							
C517 $\Delta$	1-108-427-91	MYLAR	0.033MF	10%	200V							
C518	1-102-125-00	CERAMIC	0.0047MF	10%	50V	CF301	1-409-344-00	CERAMIC TRAP 3.58MHZ				
C520	1-106-385-00	MYLAR	0.056MF	10%	100V							
C521	1-124-903-11	ELECT	1MF	20%	50V							
C522	1-102-824-00	CERAMIC	470PF	5%	50V							
C523	1-124-927-11	ELECT	4.7MF	20%	50V	CP008	1-233-147-11	COMPOSITION CIRCUIT BLOCK				
C530	1-124-277-11	ELECT	4.7MF	20%	25V	CP102	1-233-145-11	COMPOSITION CIRCUIT BLOCK				
C534	1-124-122-11	ELECT	100MF	20%	35V	CP104	1-233-147-11	COMPOSITION CIRCUIT BLOCK				
C535	1-102-030-00	CERAMIC	330PF	10%	500V	CP106	1-236-357-11	NETWORK, RES				
C537	1-106-363-00	MYLAR	0.0068MF	10%	100V	CP107	1-233-146-11	COMPOSITION CIRCUIT BLOCK				
C538	1-106-375-12	MYLAR	0.022MF	10%	100V							
C539	1-124-927-11	ELECT	4.7MF	20%	50V	CP108	1-233-118-11	COMPOSITION CIRCUIT BLOCK				
C540	1-124-925-11	ELECT	2.2MF	20%	50V	CP109	1-233-117-11	COMPOSITION CIRCUIT BLOCK				
C541	1-124-910-11	ELECT	47MF	20%	50V	CP112	1-236-490-11	NETWORK, RES, THICK FILM				
C542	1-123-587-00	ELECT	560MF	10%	25V	CP117	1-236-078-11	NETWORK, RES, THICK FILM				
C543	1-124-907-11	ELECT	10MF	20%	50V	CP351	1-236-253-11	NETWORK, RES, THICK FILM				
C544	1-124-925-11	ELECT	2.2MF	20%	50V							
C546	1-106-343-00	MYLAR	0.001MF	10%	100V							
C548 $\Delta$	1-102-212-00	CERAMIC	820PF	10%	500V							
C549	1-124-913-11	ELECT	470MF	20%	50V	D001	8-719-911-19	DIODE ISS119				
C550	1-124-902-00	ELECT	0.47MF	20%	50V	D081	8-719-911-19	DIODE ISS119				
C551	1-164-081-11	CERAMIC	470PF	10%	50V	D082	8-719-109-86	DIODE RD5.1ES-B3				
C552 $\Delta$	1-162-115-91	CERAMIC	330PF	10%	2KV	D101	8-719-110-78	DIODE RD33ES-B2				
C553	1-102-228-00	CERAMIC	470PF	10%	500V	D104	1-809-401-11	LED UNIT				
C554 $\Delta$	1-162-116-00	CERAMIC	680PF	10%	2KV	D106	1-809-401-11	LED UNIT				
C555 $\Delta$	1-106-367-00	MYLAR	0.01MF	10%	100V	D113	8-719-911-19	DIODE ISS119				
C556	1-126-101-11	ELECT	100MF	20%	16V	D114	8-719-911-19	DIODE ISS119				
C557	1-123-024-21	ELECT	33MF	160V		D115	8-719-109-74	DIODE RD4.3ES-B1				
C558	1-124-046-00	ELECT	10MF	20%	160V	D117	8-719-109-89	DIODE RD5.6ES-B2				
C559	1-106-391-12	MYLAR	0.1MF	10%	200V	D118	8-719-911-19	DIODE ISS119				
C560	1-136-109-00	FILM	0.68MF	5%	200V	D119	8-719-911-19	DIODE ISS119				
C561	1-124-634-11	ELECT	1MF	20%	250V	D120	8-719-911-19	DIODE ISS119				
C562 $\Delta$	1-102-228-91	CERAMIC	470PF	10%	500V	D121	8-719-911-19	DIODE ISS119				
C563 $\Delta$	1-137-231-11	FILM	0.015MF	3%	2KV	D128	8-719-911-19	DIODE ISS119				
C564 $\Delta$	1-136-111-11	FILM	1MF	5%	200V	D199	8-719-911-19	DIODE ISS119				
C565 $\Delta$	1-136-313-51	FILM	0.047MF	5%	400V	D321	8-719-302-43	DIODE EL1Z				
C566	1-126-163-11	ELECT	4.7MF	20%	50V	D350	8-719-911-19	DIODE ISS119				
C567 $\Delta$	1-162-318-11	CERAMIC	0.001MF	10%	500V	D351	8-719-911-19	DIODE ISS119				
						D451	8-719-911-19	DIODE ISS119				

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REF. NO.	PART NO.	DESCRIPTION
D452	8-719-911-19	DIODE ISS119
D501	8-719-109-89	DIODE RD5.6ES-B2
D508	8-719-911-55	DIODE U05G
D511 $\Delta$	8-719-300-33	DIODE RU-3AM
D512 $\Delta$	8-719-911-19	DIODE ISS119
D513	8-719-988-57	DIODE BY228
D514	8-719-988-55	DIODE RGP15K-6179
D515	8-719-911-55	DIODE U05G
D516	8-719-911-55	DIODE U05G
D517	8-719-300-33	DIODE RU-3AM
D518 $\Delta$	8-719-976-64	DIODE RGP02-17
D519	8-719-976-64	DIODE RGP02-17
D597	8-719-979-85	DIODE EGP20G
D598	8-719-300-33	DIODE RU-3AM
D599 $\Delta$	8-719-110-35	DIODE RD13ES-B1
D601 $\Delta$	8-719-305-07	DIODE RBV-406H
D602 $\Delta$	8-719-908-03	DIODE GP08D
D603	8-719-304-63	DIODE RM11C
D604	8-719-304-63	DIODE RM11C
D605	8-719-109-93	DIODE RD6.2ES-B2
D606	8-719-911-55	DIODE U05G

## &lt;FUSE&gt;

- F601  $\Delta$  1-532-748-11 FUSE, GLASS TUBE 6.3A/125V  
 F602  $\Delta$  1-532-741-11 FUSE, GLASS TUBE 1.25A/125V

## &lt;IC&gt;

IC101	8-759-636-45	IC M34302M8-514SP
IC102	8-759-748-69	IC CAT59C11HP
IC103	8-741-618-11	IC SBX1618-11
IC251 $\Delta$	8-749-900-15	IC SI-4102
IC261 $\Delta$	8-749-900-15	IC SI-4102
IC301	8-752-031-72	IC CXA1013AS
IC302 $\Delta$	8-759-800-81	IC LA7016
IC303 $\Delta$	8-759-104-05	IC UPD6325C
IC304	8-759-231-56	IC TA7809S
IC305	8-759-929-62	IC LM7812CT
IC401	1-809-366-11	INSULATING MODULE, VIDEO
IC402	1-809-365-11	INSULATING MODULE, AUDIO
IC403	1-809-365-11	INSULATING MODULE, AUDIO
IC404	1-809-365-11	INSULATING MODULE, AUDIO
IC405	1-809-365-11	INSULATING MODULE, AUDIO
IC406	8-759-932-33	IC BU4066B
IC407	8-759-983-38	IC MB3110APS-G-SNY
IC501	8-759-105-82	IC UPC1378H-P
IC502	8-759-945-58	IC RC4558P
IC601 $\Delta$	8-749-930-35	IC STR3035
MM201	8-741-156-80	IC SBX1568-51

## &lt;IF BLOCK&gt;

- IF201 1-464-756-21 IF BLOCK (IFF-450A)

## &lt;JACK&gt;

- J451 1-569-355-11 JACK BLOCK, PIN 5P

## &lt;COIL&gt;

L102	1-408-421-00	INDUCTOR	100UH
L103	1-408-421-00	INDUCTOR	100UH

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by shading and mark  $\Delta$  are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK
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L104	1-408-404-00	INDUCTOR	3.9UH
L108	1-408-411-00	INDUCTOR	15UH
L109	1-408-411-00	INDUCTOR	15UH
L203	1-408-408-00	INDUCTOR	8.2UH
L301	1-408-411-00	INDUCTOR	15UH
L302	1-408-412-00	INDUCTOR	18UH
L501 $\Delta$	1-410-666-31	INDUCTOR	18UH
L503 $\Delta$	1-410-669-31	INDUCTOR	33UH
L505	1-459-104-00	COIL, DUST CORE	
L506	1-407-365-00	COIL, CHOKE	
L508	1-412-553-11	INDUCTOR	3.3MH
L509 $\Delta$	1-459-390-31	COIL (WITH CORE)	
L510 $\Delta$	1-459-626-12	HLC	
L511	1-459-075-00	COIL, DYNAMIC CONVERSION CHOKE	
L513	1-410-665-31	INDUCTOR	15UH
L516 $\Delta$	1-412-524-21	INDUCTOR	8.2UH
L601 $\Delta$	1-412-519-21	INDUCTOR	3.3UH
L602 $\Delta$	1-412-519-21	INDUCTOR	3.3UH
L609	1-408-398-00	INDUCTOR	1.2UH

## &lt;MODULE&gt;

- PM501 1-809-335-11 MODULE, PROTECTOR (PM-22)

## &lt;TRANSISTOR&gt;

Q107	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q108	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q109	8-729-423-44	TRANSISTOR 2SA1309A-QRS
Q110	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q112	8-729-378-84	TRANSISTOR 2SD788-5
Q113	8-729-423-44	TRANSISTOR 2SA1309A-QRS
Q114	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q115	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q116	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q119	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q120	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q121	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q122	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q123	8-729-423-44	TRANSISTOR 2SA1309A-QRS
Q301	8-729-423-35	TRANSISTOR 2SC3311A-R
Q302	8-729-423-35	TRANSISTOR 2SC3311A-R
Q303	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q304	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q305	8-729-423-44	TRANSISTOR 2SA1309A-QRS
Q306	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q354	8-729-423-44	TRANSISTOR 2SA1309A-QRS
Q371	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q398	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q401	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q501 $\Delta$	8-729-202-03	TRANSISTOR 2SD1408-Y
Q502	8-729-423-44	TRANSISTOR 2SA1309A-QRS
Q503	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q504	8-729-423-44	TRANSISTOR 2SA1309A-QRS
Q505	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q506	8-729-423-44	TRANSISTOR 2SA1309A-QRS
Q507	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q550	8-729-119-80	TRANSISTOR 2SC2688-LK
Q551	8-729-821-87	TRANSISTOR 2SD1878-CA
Q552	8-729-423-37	TRANSISTOR 2SC3311A-QRS
Q553	8-729-200-17	TRANSISTOR 2SA1091-0
Q599	8-729-378-84	TRANSISTOR 2SD788-5
Q601	8-729-255-12	TRANSISTOR 2SC2551-0

The components identified by shading and mark  $\Delta$  are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque  $\Delta$  sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by  $\blacksquare$  in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
				R139	1-249-433-11	CARBON	22K 5% 1/4W
				R142	1-249-429-11	CARBON	10K 5% 1/4W
				R143	1-249-429-11	CARBON	10K 5% 1/4W
				R146	1-249-417-11	CARBON	1K 5% 1/4W
				R147	1-249-428-11	CARBON	8.2K 5% 1/4W
		<RESISTOR>		R148	1-249-432-11	CARBON	18K 5% 1/4W
R001	1-249-421-11	CARBON	2.2K 5% 1/4W	R149	1-249-423-11	CARBON	3.3K 5% 1/4W
R002	1-249-414-11	CARBON	560 5% 1/4W	R150	1-249-437-11	CARBON	47K 5% 1/4W
R003	1-249-414-11	CARBON	560 5% 1/4W	R151	1-249-429-11	CARBON	10K 5% 1/4W
R004	1-249-414-11	CARBON	560 5% 1/4W	R152	1-249-440-11	CARBON	82K 5% 1/4W
R005	1-249-414-11	CARBON	560 5% 1/4W	R153	1-247-903-00	CARBON	1M 5% 1/4W
R008	1-249-414-11	CARBON	560 5% 1/4W	R157	1-249-405-11	CARBON	100 5% 1/4W
R010	1-249-417-11	CARBON	1K 5% 1/4W	R159	1-249-405-11	CARBON	100 5% 1/4W
R011	1-249-417-11	CARBON	1K 5% 1/4W	R170	1-249-415-11	CARBON	680 5% 1/4W
R013	1-249-414-11	CARBON	560 5% 1/4W	R172	1-249-429-11	CARBON	10K 5% 1/4W
R014	1-249-421-11	CARBON	2.2K 5% 1/4W	R174	1-249-437-11	CARBON	47K 5% 1/4W
R015	1-249-421-11	CARBON	2.2K 5% 1/4W	R175	1-249-441-11	CARBON	100K 5% 1/4W
R016	1-249-421-11	CARBON	2.2K 5% 1/4W	R176	1-249-441-11	CARBON	100K 5% 1/4W
R017	1-249-421-11	CARBON	2.2K 5% 1/4W	R180	1-249-426-11	CARBON	5.6K 5% 1/4W
R018	1-249-416-11	CARBON	820 5% 1/4W	R182	1-249-415-11	CARBON	680 5% 1/4W
R019	1-249-429-11	CARBON	10K 5% 1/4W	R207	1-249-435-11	CARBON	33K 5% 1/4W
R020	1-249-429-11	CARBON	10K 5% 1/4W	R208	1-249-425-11	CARBON	4.7K 5% 1/4W
R021	1-249-434-11	CARBON	27K 5% 1/4W	R217	1-249-417-11	CARBON	1K 5% 1/4W
R022	1-249-414-11	CARBON	560 5% 1/4W	R229	1-249-429-11	CARBON	10K 5% 1/4W
R023	1-249-414-11	CARBON	560 5% 1/4W	R251	1-249-434-11	CARBON	27K 5% 1/4W
R024	1-249-421-11	CARBON	2.2K 5% 1/4W	R252	$\Delta$ 1-249-401-91	CARBON	47 5% 1/4W F
R025	1-249-421-11	CARBON	2.2K 5% 1/4W	R253	1-249-409-11	CARBON	220 5% 1/4W F
R026	1-249-421-11	CARBON	2.2K 5% 1/4W	R254	1-249-409-11	CARBON	10K 5% 1/4W
R027	1-249-421-11	CARBON	2.2K 5% 1/4W	R261	1-249-434-11	CARBON	27K 5% 1/4W
R028	1-249-423-11	CARBON	3.3K 5% 1/4W	R262	$\Delta$ 1-249-401-91	CARBON	47 5% 1/4W F
R029	1-249-414-11	CARBON	560 5% 1/4W	R264	1-249-413-11	CARBON	470 5% 1/4W F
R030	1-249-405-11	CARBON	100 5% 1/4W	R265	1-249-431-11	CARBON	15K 5% 1/4W
R031	1-249-414-11	CARBON	560 5% 1/4W	R301	1-215-472-00	METAL	130K 1% 1/6W
R032	1-249-414-11	CARBON	560 5% 1/4W	R302	1-249-438-11	CARBON	56K 5% 1/4W
R035	1-249-417-11	CARBON	1K 5% 1/4W	R304	1-247-889-00	CARBON	270K 5% 1/4W
R036	1-249-416-11	CARBON	820 5% 1/4W	R305	1-249-440-11	CARBON	82K 5% 1/4W
R037	1-249-416-11	CARBON	820 5% 1/4W	R310	1-249-411-11	CARBON	330 5% 1/4W
R038	1-249-414-11	CARBON	560 5% 1/4W	R306	1-249-437-11	CARBON	47K 5% 1/4W
R040	1-249-431-11	CARBON	15K 5% 1/4W	R307	1-249-429-11	CARBON	10K 5% 1/4W
R044	1-249-414-11	CARBON	560 5% 1/4W	R308	1-249-411-11	CARBON	330 5% 1/4W
R046	1-249-433-11	CARBON	22K 5% 1/4W	R309	1-249-411-11	CARBON	330 5% 1/4W
R047	1-249-439-11	CARBON	68K 5% 1/4W	R310	1-249-411-11	CARBON	330 5% 1/4W
R089	1-249-405-11	CARBON	100 5% 1/4W	R312	1-249-405-11	CARBON	100 5% 1/4W
R090	1-249-405-11	CARBON	100 5% 1/4W	R313	1-249-427-11	CARBON	6.8K 5% 1/4W
R102	1-249-417-11	CARBON	1K 5% 1/4W	R314	1-249-407-11	CARBON	150 5% 1/4W
R103	1-215-923-00	METAL OXIDE	10K 5% 3W F	R315	1-249-417-11	CARBON	1K 5% 1/4W
R108	1-249-425-11	CARBON	4.7K 5% 1/4W	R316	1-249-411-11	CARBON	330 5% 1/4W
R113	1-249-417-11	CARBON	1K 5% 1/4W	R317	1-249-419-11	CARBON	1.5K 5% 1/4W
R115	1-249-417-11	CARBON	1K 5% 1/4W	R318	1-249-417-11	CARBON	1K 5% 1/4W
R116	1-249-421-11	CARBON	2.2K 5% 1/4W	R319	1-249-417-11	CARBON	1K 5% 1/4W
R117	1-249-421-11	CARBON	2.2K 5% 1/4W	R320	1-249-417-11	CARBON	1K 5% 1/4W
R118	1-249-433-11	CARBON	22K 5% 1/4W	R321	1-249-433-11	CARBON	22K 5% 1/4W
R120	1-249-437-11	CARBON	47K 5% 1/4W	R322	$\Delta$	CARBON	6.8K 5% 1/4W
R121	1-249-434-11	CARBON	27K 5% 1/4W	R323	1-249-427-11	CARBON	6.8K 5% 1/4W
R123	1-249-417-11	CARBON	1K 5% 1/4W	R324	$\Delta$ 1-249-389-11	CARBON	4.7 5% 1/4W F
R124	1-249-417-11	CARBON	1K 5% 1/4W	R325	1-249-441-11	CARBON	100K 5% 1/4W
R125	1-249-417-11	CARBON	1K 5% 1/4W	R326	1-249-441-11	CARBON	100K 5% 1/4W
R126	1-249-429-11	CARBON	10K 5% 1/4W	R328	1-249-419-11	CARBON	1.5K 5% 1/4W
R127	1-249-413-11	CARBON	470 5% 1/4W	R329	1-249-441-11	CARBON	100K 5% 1/4W
R129	1-249-423-11	CARBON	3.3K 5% 1/4W	R330	1-249-426-11	CARBON	5.6K 5% 1/4W
R132	1-249-429-11	CARBON	10K 5% 1/4W	R331	1-249-417-11	CARBON	1K 5% 1/4W
R133	1-249-433-11	CARBON	22K 5% 1/4W				
R134	1-249-405-11	CARBON	100 5% 1/4W				
R135	1-249-438-11	CARBON	56K 5% 1/4W				
R136	1-249-405-11	CARBON	100 5% 1/4W				
R138	1-249-411-11	CARBON	330 5% 1/4W				

**A**

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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R333	1-249-429-11	CARBON	10K 5% 1/4W	R461	A1-202-726-91	SOLID	3.9M 10% 1/2W
R334	1-249-413-11	CARBON	470 5% 1/4W	R501	1-216-458-11	METAL OXIDE	1.8K 5% 2W F
R335	1-249-425-11	CARBON	4.7K 5% 1/4W	R502	1-216-458-11	METAL OXIDE	1.8K 5% 2W F
R336	1-249-441-11	CARBON	100K 5% 1/4W	R503	1-216-458-11	METAL OXIDE	1.8K 5% 2W F
R337	1-249-417-11	CARBON	1K 5% 1/4W	R504	1-216-458-11	METAL OXIDE	1.8K 5% 2W F
R338	1-247-903-00	CARBON	1M 5% 1/4W	R505	1-215-472-00	METAL	130K 1% 1/6W
R341	1-249-417-11	CARBON	1K 5% 1/4W	R506	1-249-407-11	CARBON	150 5% 1/4W
R342	1-249-421-11	CARBON	2.2K 5% 1/4W	R507	1-249-426-11	CARBON	5.6K 5% 1/4W
R350	1-249-437-11	CARBON	47K 5% 1/4W	R508	1-249-437-11	CARBON	47K 5% 1/4W
R352	1-247-889-00	CARBON	270K 5% 1/4W	R509	1-249-434-11	CARBON	27K 5% 1/4W
R353	1-249-429-11	CARBON	10K 5% 1/4W	R510	1-249-422-11	CARBON	2.7K 5% 1/4W
R354	1-249-405-11	CARBON	100 5% 1/4W	R511	A1-216-470-00	METAL OXIDE	18 5% 3W F
R355	1-249-433-11	CARBON	22K 5% 1/4W	R512	1-249-411-11	CARBON	330 5% 1/4W
R357	1-249-405-11	CARBON	100 5% 1/4W	R513	1-215-472-00	METAL	130K 1% 1/6W
R360	1-249-426-11	CARBON	5.6K 5% 1/4W	R514	1-215-457-00	METAL	33K 1% 1/6W
R361	1-249-429-11	CARBON	10K 5% 1/4W	R515	1-249-427-11	CARBON	6.8K 5% 1/4W
R362	1-215-883-11	METAL OXIDE	33 5% 2W F	R516	1-249-428-11	CARBON	8.2K 5% 1/4W
R363	1-249-422-11	CARBON	2.7K 5% 1/4W	R517	1-249-417-11	CARBON	1K 5% 1/4W
R364	1-249-420-11	CARBON	1.8K 5% 1/4W	R518	A1-216-379-91	METAL OXIDE	6.8 5% 2W F
R366	1-249-430-11	CARBON	12K 5% 1/4W	R519	1-249-424-11	CARBON	3.9K 5% 1/4W
R367	1-249-436-11	CARBON	39K 5% 1/4W	R520	1-249-421-11	CARBON	2.2K 5% 1/4W
R368	1-249-427-11	CARBON	6.8K 5% 1/4W	R521	1-249-417-11	CARBON	1K 5% 1/4W
R371	1-249-429-11	CARBON	10K 5% 1/4W	R522	1-249-431-11	CARBON	15K 5% 1/4W
R397	1-249-434-11	CARBON	27K 5% 1/4W	R523	1-249-417-11	CARBON	1K 5% 1/4W
R398	1-249-423-11	CARBON	3.3K 5% 1/4W	R524	1-249-429-11	CARBON	10K 5% 1/4W
R401	1-249-409-11	CARBON	220 5% 1/4W	R525	1-249-417-11	CARBON	1K 5% 1/4W
R402	1-249-438-11	CARBON	56K 5% 1/4W	R526	1-249-423-11	CARBON	3.3K 5% 1/4W
R403	1-249-438-11	CARBON	56K 5% 1/4W	R527	1-259-871-15	CARBON	6.8M 5% 1/4W
R404	1-249-437-11	CARBON	47K 5% 1/4W	R528	1-249-419-11	CARBON	1.5K 5% 1/4W
R405	1-249-438-11	CARBON	56K 5% 1/4W	R529	1-249-417-11	CARBON	1K 5% 1/4W
R406	1-249-405-11	CARBON	100 5% 1/4W	R530	1-249-433-11	CARBON	22K 5% 1/4W
R408	1-249-438-11	CARBON	56K 5% 1/4W	R531	1-249-410-11	CARBON	270 5% 1/4W
R409	1-249-441-11	CARBON	100K 5% 1/4W	R532	1-249-438-11	CARBON	56K 5% 1/4W
R410	1-249-438-11	CARBON	56K 5% 1/4W	R533	1-247-887-00	CARBON	220K 5% 1/4W
R411	1-249-405-11	CARBON	100 5% 1/4W	R534	1-249-417-11	CARBON	1K 5% 1/4W
R412	1-249-441-11	CARBON	100K 5% 1/4W	R535	1-249-431-11	CARBON	15K 5% 1/4W
R413	1-249-441-11	CARBON	100K 5% 1/4W	R536	1-249-426-11	CARBON	5.6K 5% 1/4W
R414	1-249-438-11	CARBON	56K 5% 1/4W	R537	1-249-430-11	CARBON	12K 5% 1/4W
R415	1-249-438-11	CARBON	56K 5% 1/4W	R538	1-249-405-11	CARBON	100 5% 1/4W
R416	1-249-438-11	CARBON	56K 5% 1/4W	R539	1-215-373-31	METAL	10 1% 1/6W
R417	1-249-438-11	CARBON	56K 5% 1/4W	R540	1-249-408-11	CARBON	180 5% 1/4W
R418	1-249-405-11	CARBON	100 5% 1/4W	R541	1-249-427-11	CARBON	6.8K 5% 1/4W
R419	1-249-405-11	CARBON	100 5% 1/4W	R542	1-249-423-11	CARBON	3.3K 5% 1/4W
R420	1-249-434-11	CARBON	27K 5% 1/4W	R543	1-249-430-11	CARBON	12K 5% 1/4W
R421	1-249-405-11	CARBON	100 5% 1/4W	R544	1-249-425-11	CARBON	4.7K 5% 1/4W
R422	1-249-429-11	CARBON	10K 5% 1/4W	R545	1-247-750-11	CARBON	680 5% 1/2W
R423	1-249-429-11	CARBON	10K 5% 1/4W	R546	1-249-417-11	CARBON	1K 5% 1/4W
R424	1-249-429-11	CARBON	10K 5% 1/4W	R547	1-249-429-11	CARBON	10K 5% 1/4W
R426	1-249-424-11	CARBON	3.9K 5% 1/4W	R548	1-249-496-11	CARBON	100K 5% 1/2W
R427	1-249-435-11	CARBON	33K 5% 1/4W	R549	1-249-415-11	CARBON	680 5% 1/4W F
R429	1-249-435-11	CARBON	33K 5% 1/4W	R550	1-249-431-11	CARBON	15K 5% 1/4W
R430	1-249-424-11	CARBON	3.9K 5% 1/4W	R551	1-249-431-11	CARBON	15K 5% 1/4W
R431	1-249-431-11	CARBON	15K 5% 1/4W	R552	1-249-414-11	CARBON	560 5% 1/4W
R432	1-249-431-11	CARBON	15K 5% 1/4W	R554	1-249-427-11	CARBON	6.8K 5% 1/4W
R433	1-249-409-11	CARBON	220 5% 1/4W F	R555	1-249-413-11	CARBON	470 5% 1/4W
R451	1-249-404-00	CARBON	82 5% 1/4W	R556	1-216-352-11	METAL OXIDE	1.8 5% 1W F
R452	1-249-438-11	CARBON	56K 5% 1/4W	R557	1-249-419-11	CARBON	1.5K 5% 1/4W
R453	1-249-437-11	CARBON	47K 5% 1/4W	R558	1-249-410-11	CARBON	270 5% 1/4W
R454	1-249-438-11	CARBON	56K 5% 1/4W	R559	1-249-415-11	CARBON	680 5% 1/4W
R455	1-249-437-11	CARBON	47K 5% 1/4W	R560	1-249-423-11	CARBON	3.3K 5% 1/4W
R456	1-249-441-11	CARBON	100K 5% 1/4W	R561	1-249-496-11	CARBON	100K 5% 1/2W
R457	1-249-417-11	CARBON	1K 5% 1/4W	R562	1-249-429-11	CARBON	10K 5% 1/4W
R458	1-249-441-11	CARBON	100K 5% 1/4W	R563	1-249-436-11	CARBON	39K 5% 1/4W
R459	1-249-417-11	CARBON	1K 5% 1/4W				

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A

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R564	1-215-417-00	METAL	680 1%	1/6W			
R565	1-249-425-11	CARBON	4.7K 5%	1/4W			
R566	1-247-883-00	CARBON	150K 5%	1/4W			
R567	1-216-380-11	METAL OXIDE	8.2 5%	2W F			
R568	A1-216-390-11	METAL OXIDE	1.2 5%	3W F			
R569	1-214-913-00	METAL	100K 1%	1/2W			
R570	1-215-898-11	METAL OXIDE	10K 5%	2W F			
R571	1-216-356-00	METAL OXIDE	3.9 5%	1W F			
R572	1-249-423-11	CARBON	3.3K 5%	1/4W			
R575	1-249-401-11	CARBON	47 5%	1/4W			
R577	A1-216-451-11	METAL OXIDE	120 5%	2W F			
R578	1-259-880-11	CARBON	2.2M 5%	1/4W			
R579	A1-249-415-91	CARBON	680 5%	1/4W F			
R580	1-215-863-11	METAL OXIDE	100 5%	1W F			
R581	1-249-417-11	CARBON	1K 5%	1/4W F			
R582	1-215-863-11	METAL OXIDE	100 5%	1W F			
R583	1-215-863-11	METAL OXIDE	100 5%	1W F			
R586	1-247-746-11	CARBON	390 5%	1/2W			
R587	A1-215-870-91	METAL OXIDE	1.5K 5%	1W F			
R589	1-249-441-11	CARBON	100K 5%	1/4W			
R598	1-249-389-11	CARBON	4.7 5%	1/4W F			
R599	1-249-417-11	CARBON	1K 5%	1/4W			
R601	A1-202-726-91	SOLID	3.9M 10%	1/2W			
R602	A1-205-792-11	WIREWOUND	1.8 5%	10W F			
R603	1-247-889-00	CARBON	270K 5%	1/4W			
R605	A1-205-984-11	WIREWOUND	150 5%	20W			
R610	A1-217-224-11	WIREWOUND	100 10%	2W F			
R611	1-215-872-11	METAL OXIDE	3.3K 5%	1W F			
R612	1-205-986-11	WIREWOUND	4.7K 5%	20W			
R613	1-249-437-11	CARBON	47K 5%	1/4W			
R614	1-249-429-11	CARBON	10K 5%	1/4W			
R615	A1-216-463-91	METAL OXIDE	12K 5%	2W F			
R616	A1-247-719-91	CARBON	3.3K 5%	1/4W F			
R617	A1-249-401-11	CARBON	47 5%	1/4W F			
R618	1-247-895-00	CARBON	470K 5%	1/4W			
<b>&lt;VARIABLE RESISTOR&gt;</b>							
RV131	1-238-012-11	RES. ADJ. CARBON 1K					
RV201	1-238-016-11	RES. ADJ. CARBON 10K					
RV299	1-238-011-11	RES. ADJ. CARBON 470					
RV306	1-238-016-11	RES. ADJ. CARBON 10K					
RV307	1-238-011-11	RES. ADJ. CARBON 470					
RV501	1-228-728-00	RES. ADJ. CERAMIC CARBON 100K					
RV502	1-238-020-11	RES. ADJ. CARBON 100K					
RV503	1-224-251-99	RES. ADJ. METAL GLAZE 4.7K					
RV505	1-238-017-11	RES. ADJ. CARBON 22K					
RV506	1-238-019-11	RES. ADJ. CARBON 47K					
RV507	1-238-010-11	RES. ADJ. CARBON 330					
RV508	1-238-012-11	RES. ADJ. CARBON 1K					
<b>&lt;RELAY&gt;</b>							
RY601	A1-515-573-13	RELAY, POWER					
<b>&lt;SWITCH&gt;</b>							
S101	A1-571-532-23	SWITCH, TACTIL (POWER)					
S102	1-571-532-21	SWITCH, TACTIL					
S103	1-571-532-21	SWITCH, TACTIL					
S104	1-571-532-21	SWITCH, TACTIL					
S105	1-571-532-21	SWITCH, TACTIL					
S106	1-571-532-21	SWITCH, TACTIL					
S401	1-554-706-11	SWITCH, SLIDE					
<b>&lt;CAPACITOR&gt;</b>							
C047	1-124-927-11	ELECT	4.7MF	20%	50 V		
C101	1-164-077-11	CERAMIC	220PF	10%	50 V		
C102	1-126-233-11	ELECT	22MF	20%	50 V		
C103	1-126-103-11	ELECT	470MF	20%	16 V		
C104	1-126-101-11	ELECT	100MF	20%	16 V		
*****							

**A**

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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK				
C105	I-164-077-11	CERAMIC	220PF	10%	50V	C508	I-101-006-00	CERAMIC	0.047MF	50V	
C107	I-101-361-00	CERAMIC	150PF	5%	50V	C509	I-101-006-00	CERAMIC	0.047MF	50V	
C108	I-101-361-00	CERAMIC	150PF	5%	50V	C510	I-106-367-00	MYLAR	0.01MF	10%	100V
C109	I-124-927-11	ELECT	4.7MF	20%	50V	C511	I-106-379-12	MYLAR	0.033MF	10%	100V
C110	I-124-927-11	ELECT	4.7MF	20%	50V	C512	I-124-925-11	ELECT	2.2MF	20%	50V
C114	I-124-907-11	ELECT	10MF	20%	50V	C513	I-124-903-11	ELECT	1MF	20%	50V
C115	I-126-103-11	ELECT	470MF	20%	16V	C514	I-124-907-11	ELECT	10MF	20%	50V
C116	I-136-165-00	FILM	0.1MF	5%	50V	C515	I-124-464-11	ELECT	0.22MF	20%	50V
C118	I-106-367-00	MYLAR	0.01MF	10%	100V	C516	I-124-477-11	ELECT	47MF	20%	16V
C120	I-106-383-00	MYLAR	0.047MF		200V	C517	A I-108-427-91	MYLAR	0.033MF	10%	200V
C121	I-124-477-11	ELECT	47MF	20%	16V	C518	I-102-125-00	CERAMIC	0.0047MF	10%	50V
C126	I-124-902-00	ELECT	0.47MF	20%	50V	C520	I-106-385-00	MYLAR	0.056MF	10%	100V
C132	I-164-033-11	CERAMIC	39PF	5%	50V	C521	I-124-903-11	ELECT	1MF	20%	50V
C133	I-102-973-00	CERAMIC	100PF	5%	50V	C522	I-102-824-00	CERAMIC	470PF	5%	50V
C135	I-102-121-00	CERAMIC	0.0022MF	10%	50V	C523	I-124-927-11	ELECT	4.7MF	20%	50V
C139	I-124-477-11	ELECT	47MF	20%	16V	C530	I-124-277-11	ELECT	4.7MF	20%	25V
C140	I-102-121-00	CERAMIC	0.0022MF	10%	50V	C534	I-124-122-11	ELECT	100MF	20%	35V
C142	I-101-005-00	CERAMIC	0.022MF		50V	C535	I-102-030-00	CERAMIC	330PF	10%	500V
C143	I-106-379-12	MYLAR	0.033MF	10%	100V	C537	I-106-363-00	MYLAR	0.0068MF	10%	100V
C144	I-106-375-12	MYLAR	0.022MF	10%	100V	C538	I-106-375-12	MYLAR	0.022MF	10%	100V
C201	I-126-101-11	ELECT	100MF	20%	16V	C539	I-124-927-11	ELECT	4.7MF	20%	50V
C205	I-124-907-11	ELECT	10MF	20%	50V	C540	I-124-925-11	ELECT	2.2MF	20%	50V
C206	I-102-125-00	CERAMIC	0.0047MF	10%	50V	C541	I-124-910-11	ELECT	47MF	20%	50V
C261	I-124-925-11	ELECT	2.2MF	20%	100V	C542	I-123-587-00	ELECT	560MF	10%	25V
C262	I-124-799-11	ELECT	2.2MF	20%	160V	C543	I-124-907-11	ELECT	10MF	20%	50V
C263	I-124-667-11	ELECT	10MF	20%	100V	C544	I-124-925-11	ELECT	2.2MF	20%	50V
C265	I-124-910-11	ELECT	47MF	20%	50V	C546	I-106-343-00	MYLAR	0.001MF	10%	100V
C266	I-106-379-12	MYLAR	0.033MF	10%	100V	C548	I-102-212-00	CERAMIC	820PF	10%	500V
C301	I-124-902-00	ELECT	0.47MF	20%	50V	C549	I-124-913-11	ELECT	470MF	20%	50V
C302	I-164-056-11	CERAMIC	27PF	5%	50V	C550	I-124-902-00	ELECT	0.47MF	20%	50V
C303	I-126-101-11	ELECT	100MF	20%	16V	C551	I-164-081-11	CERAMIC	470PF	10%	50V
C305	I-124-902-00	ELECT	0.47MF	20%	50V	C552	A I-162-115-91	CERAMIC	330PF	10%	2KV
C309	I-124-903-11	ELECT	1MF	20%	50V	C553	I-102-228-00	CERAMIC	470PF	10%	500V
C312	I-164-050-11	CERAMIC	15PF	5%	50V	C554	I-162-116-00	CERAMIC	680PF	10%	2KV
C314	I-164-070-11	CERAMIC	100PF	5%	50V	C555	I-106-367-00	MYLAR	0.01MF	10%	100V
C315	I-124-907-11	ELECT	10MF	20%	50V	C556	I-126-101-11	ELECT	100MF	20%	16V
C317	I-126-233-11	ELECT	22MF	20%	50V	C557	I-123-024-21	ELECT	33MF		160V
C318	I-102-074-00	CERAMIC	0.001MF	10%	50V	C558	I-124-046-00	ELECT	10MF	20%	160V
C321	I-102-129-00	CERAMIC	0.01MF	10%	50V	C559	I-106-391-12	MYLAR	0.1MF	10%	100V
C322	I-124-907-11	ELECT	10MF	20%	50V	C560	I-136-109-00	FILM	0.68MF	5%	100V
C330	I-124-120-11	ELECT	220MF	20%	16V	C561	I-124-634-11	ELECT	1MF	20%	50V
C331	I-126-101-11	ELECT	100MF	20%	16V	C562	A I-102-228-91	CERAMIC	470PF	10%	100V
C340	I-123-932-00	ELECT	4.7MF	20%	160V	C563	A I-137-231-11	FILM	0.015MF	3%	2KV
C342	I-102-074-00	CERAMIC	0.001MF	10%	50V	C564	A I-136-111-11	FILM	1MF	5%	100V
C351	I-124-477-11	ELECT	47MF	20%	16V	C565	A I-136-313-51	FILM	0.047MF	5%	100V
C352	I-124-477-11	ELECT	47MF	20%	16V	C566	I-126-163-11	ELECT	4.7MF	20%	50V
C353	I-124-907-11	ELECT	10MF	20%	50V	C567	I-162-318-11	CERAMIC	0.001MF	10%	100V
C356	I-124-477-11	ELECT	47MF	20%	16V	C568	I-106-383-00	MYLAR	0.047MF	10%	100V
C364	I-124-480-11	ELECT	470MF	20%	25V	C569	I-106-375-12	MYLAR	0.022MF		100V
C366	I-124-907-11	ELECT	10MF	20%	50V	C570	I-162-114-00	CERAMIC	0.0047MF		XV
C367	I-124-477-11	ELECT	47MF	20%	16V	C571	I-106-371-00	MYLAR	0.015MF		100V
C398	I-164-077-11	CERAMIC	220PF	10%	50V	C572	I-124-907-11	ELECT	10MF	20%	5V
C402	I-124-119-00	ELECT	330MF	20%	16V	C575	I-106-359-00	MYLAR	0.0047MF	10%	100V
C403	I-124-907-11	ELECT	10MF	20%	50V	C579	I-129-898-00	FILM	0.0022MF	5%	100V
C408	I-124-907-11	ELECT	10MF	20%	50V	C580	I-162-116-00	CERAMIC	680PF	10%	XV
C421	I-124-907-11	ELECT	10MF	20%	50V	C594	I-124-557-11	ELECT	1000MF	20%	5V
C451	I-124-119-00	ELECT	330MF	20%	16V	C595	I-102-212-00	CERAMIC	820PF	10%	100V
C452	I-124-903-11	ELECT	1MF	20%	50V	C596	I-162-117-00	CERAMIC	100PF	10%	100V
C461	A I-161-742-51	CERAMIC	0.0022MF	20%	400V	C597	I-124-484-11	ELECT	220MF	20%	5V
C501	I-126-101-11	ELECT	100MF	20%	16V	C599	I-124-120-11	ELECT	220MF	20%	5V
C502	I-106-363-00	MYLAR	0.0068MF	10%	100V	C601	A I-108-745-52	MYLAR	0.22MF	20%	125V
C503	I-124-903-11	ELECT	1MF	20%	50V	C602	I-125-679-31	ELECT	560MF		20V
C505	I-106-363-00	MYLAR	0.0068MF	10%	100V	C603	I-161-830-00	CERAMIC	0.0047MF		100V
C507	I-164-077-11	CERAMIC	220PF	10%	50V						

The components identified by shading and mark  are critical for safety.  
Replace only with part number specified.

**Les composants identifies par une trame et une marque A sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.**

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REF. NO.	PART NO.	DESCRIPTION		REMARK	REF. NO.	PART NO.	DESCRIPTION	
C604	1-161-830-00	CERAMIC	0.0047MF	500V	D606	8-719-911-55	DIODE U05G	
C605	1-123-948-00	ELECT	22MF	20%	250V			
C606	1-126-176-11	ELECT	220MF	20%	10V			
C615	1-124-046-00	ELECT	10MF	20%	160V			<FUSE>
C616	1-124-046-00	ELECT	10MF	20%	160V			
C617	1-124-046-00	ELECT	10MF	20%	160V	F601 △ 1-532-748-11	FUSE, GLASS TUBE 6.3A/125V	
					F602 △ 1-532-741-11	FUSE, GLASS TUBE 1.25A/125V		
		<FILTER>					<IC>	
CF301	1-409-344-00	CERAMIC TRAP	3.58MHZ		IC101	8-759-636-45	IC M34302M8-514SP	
		<COMPOSITION CIRCUIT BLOCK>			IC102	8-759-748-69	IC CAT59C11HP	
CP008	1-233-147-11	COMPOSITION CIRCUIT BLOCK			IC103	8-741-618-11	IC SBX1618-11	
CP102	1-233-145-11	COMPOSITION CIRCUIT BLOCK			IC261△ 8-749-900-15	IC SI-4102		
CP104	1-233-147-11	COMPOSITION CIRCUIT BLOCK			IC301	8-752-031-72	IC CXA1013AS	
CP106	1-236-357-11	NETWORK, RES			IC302	8-759-800-81	IC LA7016	
CP107	1-233-146-11	COMPOSITION CIRCUIT BLOCK			IC303	8-759-104-05	IC UPD6325C	
CP108	1-233-118-11	COMPOSITION CIRCUIT BLOCK			IC304	8-759-231-56	IC LC7809S	
CP109	1-233-117-11	COMPOSITION CIRCUIT BLOCK			IC305	8-759-929-62	IC LM7812CT	
CP112	1-236-490-11	NETWORK, RES, THICK FILM			IC401	1-809-366-11	INSULATING MODULE, VIDEO	
CP117	1-236-078-11	NETWORK, RES, THICK FILM			IC402	1-809-365-11	INSULATING MODULE, AUDIO	
CP351	1-236-253-11	NETWORK, RES, THICK FILM			IC406	8-759-932-33	IC RC4066B	
					IC501	8-759-105-82	IC UPC1378H-P	
					IC502	8-759-945-58	IC RC4558P	
					IC601△ 8-749-930-35	IC STR3035		
		<DIODE>					<IF BLOCK>	
D001	8-719-911-19	DIODE ISS119			IF201	1-464-756-21	IF BLOCK (IFF-450A)	
D081	8-719-911-19	DIODE ISS119					<JACK>	
D082	8-719-109-86	DIODE RD5.1ES-B3			J451	1-569-354-11	JACK BLOCK, PIN 2P	
D101	8-719-110-78	DIODE RD33BS-B2					<COIL>	
D104	1-809-401-21	LED UNIT			L102	1-408-421-00	INDUCTOR	100UH
D113	8-719-911-19	DIODE ISS119			L103	1-408-421-00	INDUCTOR	100UH
D114	8-719-911-19	DIODE ISS119			L104	1-408-404-00	INDUCTOR	3.9UH
D115	8-719-109-74	DIODE RD4.3ES-B1			L108	1-408-411-00	INDUCTOR	15UH
D117	8-719-109-89	DIODE RD5.6ES-B2			L109	1-408-411-00	INDUCTOR	15UH
D118	8-719-911-19	DIODE ISS119			L203	1-408-408-00	INDUCTOR	8.2UH
D119	8-719-911-19	DIODE ISS119			L301	1-408-411-00	INDUCTOR	15UH
D120	8-719-911-19	DIODE ISS119			L302	1-408-412-00	INDUCTOR	18UH
D121	8-719-911-19	DIODE ISS119			L501	1-410-666-31	INDUCTOR	18UH
D128	8-719-911-19	DIODE ISS119			L503	1-410-669-31	INDUCTOR	33UH
D321	8-719-302-43	DIODE EL12			L505	1-459-104-00	COIL, DUST CORE	
D350	8-719-911-19	DIODE ISS119			L506	1-407-365-00	COIL, CHOKER	
D351	8-719-911-19	DIODE ISS119			L508	1-412-553-11	INDUCTOR	3.3MMH
D451	8-719-911-19	DIODE ISS119			L509 △ 1-459-390-31	COIL (WITH CORE)		
D452	8-719-911-19	DIODE ISS119			L510 △ 1-459-626-12	HLC		
D501	8-719-109-89	DIODE RD5.6ES-B2			L511	1-459-075-00	COIL, DYNAMIC CONVERSION CHOKE	
D508	8-719-911-55	DIODE U05G			L513	1-410-665-31	INDUCTOR	15UH
D511	8-719-300-33	DIODE RU-3AM			L516 △ 1-412-524-21	INDUCTOR	8.2UH	
D512	8-719-911-19	DIODE ISS119			L601 △ 1-412-519-21	INDUCTOR	3.3UH	
D513	8-719-988-57	DIODE BY228			L602 △ 1-412-519-21	INDUCTOR	3.3UH	
D514	8-719-988-55	DIODE RGP15K-6179			L609	1-408-398-00	INDUCTOR	1.2UH
D515	8-719-911-55	DIODE U05G					<MODULE>	
D516	8-719-911-55	DIODE U05G						
D517	8-719-300-33	DIODE RU-3AM						
D518	△ 8-719-976-64	DIODE RGP02-17						
D519	8-719-976-64	DIODE RGP02-17						
D597	8-719-979-85	DIODE EGP20G						
D598	8-719-300-33	DIODE RU-3AM						
D599	8-719-110-35	DIODE RD13ES-B1						
D601	△ 8-719-305-07	DIODE RBV-406H						
D602	△ 8-719-908-03	DIODE GPO8D						
D603	8-719-304-63	DIODE RM11C						
D604	8-719-304-63	DIODE RM11C						
D605	8-719-109-93	DIODE RD6.2ES-B2						

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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
<b>&lt;TRANSISTOR&gt;</b>							
Q107	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R031	1-249-414-11	CARBON	560 5% 1/4W
Q109	8-729-423-44	TRANSISTOR 2SA1309A-QRS		R035	1-249-417-11	CARBON	1K 5% 1/4W
Q110	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R036	1-249-416-11	CARBON	820 5% 1/4W
Q112	8-729-378-84	TRANSISTOR 2SD788-5		R037	1-249-416-11	CARBON	820 5% 1/4W
Q113	8-729-423-44	TRANSISTOR 2SA1309A-QRS		R038	1-249-414-11	CARBON	560 5% 1/4W
Q114	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R040	1-249-431-11	CARBON	15K 5% 1/4W
Q115	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R044	1-249-414-11	CARBON	560 5% 1/4W
Q116	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R046	1-249-433-11	CARBON	22K 5% 1/4W
Q119	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R047	1-249-439-11	CARBON	68K 5% 1/4W
Q120	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R089	1-249-405-11	CARBON	100 5% 1/4W
Q121	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R090	1-249-405-11	CARBON	100 5% 1/4W
Q122	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R102	1-249-417-11	CARBON	1K 5% 1/4W
Q123	8-729-423-44	TRANSISTOR 2SA1309A-QRS		R103	1-215-923-00	METAL OXIDE	10K 5% 3W F
Q201	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R108	1-249-425-11	CARBON	4.7K 5% 1/4W
Q301	8-729-423-35	TRANSISTOR 2SC3311A-R		R113	1-249-417-11	CARBON	1K 5% 1/4W
Q302	8-729-423-35	TRANSISTOR 2SC3311A-R		R115	1-249-417-11	CARBON	1K 5% 1/4W
Q303	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R116	1-249-421-11	CARBON	2.2K 5% 1/4W
Q304	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R117	1-249-421-11	CARBON	2.2K 5% 1/4W
Q305	8-729-423-44	TRANSISTOR 2SA1309A-QRS		R118	1-249-433-11	CARBON	22K 5% 1/4W
Q306	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R120	1-249-437-11	CARBON	47K 5% 1/4W
Q354	8-729-423-44	TRANSISTOR 2SA1309A-QRS		R121	1-249-434-11	CARBON	27K 5% 1/4W
Q371	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R123	1-249-417-11	CARBON	1K 5% 1/4W
Q398	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R124	1-249-417-11	CARBON	1K 5% 1/4W
Q401	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R125	1-249-417-11	CARBON	1K 5% 1/4W
Q501	8-729-202-03	TRANSISTOR 2SD1408-Y		R126	1-249-429-11	CARBON	10K 5% 1/4W
Q502	8-729-423-44	TRANSISTOR 2SA1309A-QRS		R127	1-249-413-11	CARBON	470 5% 1/4W
Q503	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R129	1-249-423-11	CARBON	3.3K 5% 1/4W
Q504	8-729-423-44	TRANSISTOR 2SA1309A-QRS		R130	1-249-423-11	CARBON	3.3K 5% 1/4W
Q505	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R132	1-249-429-11	CARBON	10K 5% 1/4W
Q506	8-729-423-44	TRANSISTOR 2SA1309A-QRS		R133	1-249-433-11	CARBON	22K 5% 1/4W
Q507	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R136	1-249-405-11	CARBON	100 5% 1/4W
Q550	8-729-119-80	TRANSISTOR 2SC2688-LK		R138	1-249-411-11	CARBON	330 5% 1/4W
Q551	8-729-821-87	TRANSISTOR 2SD1878-CA		R139	1-249-433-11	CARBON	22K 5% 1/4W
Q552	8-729-423-37	TRANSISTOR 2SC3311A-QRS		R142	1-249-429-11	CARBON	10K 5% 1/4W
Q553	8-729-200-17	TRANSISTOR 2SA1091-O		R143	1-249-429-11	CARBON	10K 5% 1/4W
Q554	8-729-200-17	TRANSISTOR 2SD1408-Y		R146	1-249-417-11	CARBON	1K 5% 1/4W
Q599	8-729-378-84	TRANSISTOR 2SD788-5		R147	1-249-428-11	CARBON	8.2K 5% 1/4W
Q601	8-729-255-12	TRANSISTOR 2SC2551-0		R148	1-249-432-11	CARBON	18K 5% 1/4W
<b>&lt;RESISTOR&gt;</b>							
R001	1-249-421-11	CARBON	2.2K 5% 1/4W	R152	1-249-440-11	CARBON	82K 5% 1/4W
R002	1-249-414-11	CARBON	560 5% 1/4W	R153	1-247-903-00	CARBON	1M 5% 1/4W
R003	1-249-414-11	CARBON	560 5% 1/4W	R157	1-249-405-11	CARBON	100 5% 1/4W
R004	1-249-414-11	CARBON	560 5% 1/4W	R159	1-249-405-11	CARBON	100 5% 1/4W
R005	1-249-414-11	CARBON	560 5% 1/4W	R170	1-249-415-11	CARBON	680 5% 1/4W
R008	1-249-414-11	CARBON	560 5% 1/4W	R172	1-249-429-11	CARBON	10K 5% 1/4W
R010	1-249-417-11	CARBON	1K 5% 1/4W	R174	1-249-437-11	CARBON	47K 5% 1/4W
R011	1-249-417-11	CARBON	1K 5% 1/4W	R175	1-249-441-11	CARBON	100K 5% 1/4W
R013	1-249-414-11	CARBON	560 5% 1/4W	R176	1-249-441-11	CARBON	100K 5% 1/4W
R014	1-249-421-11	CARBON	2.2K 5% 1/4W	R180	1-249-426-11	CARBON	5.6K 5% 1/4W
R015	1-249-421-11	CARBON	2.2K 5% 1/4W	R182	1-249-415-11	CARBON	680 5% 1/4W
R016	1-249-421-11	CARBON	2.2K 5% 1/4W	R185	1-249-429-11	CARBON	10K 5% 1/4W
R017	1-249-421-11	CARBON	2.2K 5% 1/4W	R203	1-247-885-00	CARBON	180K 5% 1/4W
R018	1-249-416-11	CARBON	820 5% 1/4W	R204	1-249-434-11	CARBON	27K 5% 1/4W
R019	1-249-429-11	CARBON	10K 5% 1/4W	R205	1-249-417-11	CARBON	1K 5% 1/4W
R020	1-249-429-11	CARBON	10K 5% 1/4W	R206	1-249-417-11	CARBON	1K 5% 1/4W
R021	1-249-434-11	CARBON	27K 5% 1/4W	R207	1-249-435-11	CARBON	33K 5% 1/4W
R022	1-249-414-11	CARBON	560 5% 1/4W	R208	1-249-425-11	CARBON	4.7K 5% 1/4W
R023	1-249-414-11	CARBON	560 5% 1/4W	R209	1-249-417-11	CARBON	1K 5% 1/4W
R026	1-249-421-11	CARBON	2.2K 5% 1/4W	R217	1-249-417-11	CARBON	1K 5% 1/4W
R027	1-249-421-11	CARBON	2.2K 5% 1/4W	R222	1-249-417-11	CARBON	1K 5% 1/4W
R028	1-249-423-11	CARBON	3.3K 5% 1/4W	R224	1-249-417-11	CARBON	1K 5% 1/4W
R029	1-249-414-11	CARBON	560 5% 1/4W				
R030	1-249-405-11	CARBON	100 5% 1/4W				

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The components identified by shading and mark **▲** are critical for safety.  
Replace only with part number specified.

Les composants identifiés par une trame et une marque **▲** sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.

The components identified by **■** in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R261	1-249-434-11	CARBON	27K 5% 1/4W	R414	1-249-438-11	CARBON	56K 5% 1/4W
R262 ▲	1-249-401-91	CARBON	47 5% 1/4W F	R415	1-249-438-11	CARBON	56K 5% 1/4W
R264	1-249-411-11	CARBON	330 5% 1/4W F	R418	1-249-405-11	CARBON	100 5% 1/4W
R265	1-249-430-11	CARBON	12K 5% 1/4W	R420	1-249-434-11	CARBON	27K 5% 1/4W
R301	1-215-472-00	METAL	130K 1% 1/6W	R421	1-249-405-11	CARBON	100 5% 1/4W
R302	1-249-438-11	CARBON	56K 5% 1/4W	R451	1-249-404-00	CARBON	82 5% 1/4W
R304	1-247-889-00	CARBON	270K 5% 1/4W	R452	1-247-885-00	CARBON	180K 5% 1/4W
R305	1-249-440-11	CARBON	82K 5% 1/4W	R453	1-249-437-11	CARBON	47K 5% 1/4W
R306	1-249-437-11	CARBON	47K 5% 1/4W	R461 ▲	1-202-726-91	SOLID	3.9M 10% 1/2W
R307	1-249-429-11	CARBON	10K 5% 1/4W	R501	1-216-458-11	METAL OXIDE	1.8K 5% 2W F
R308	1-249-411-11	CARBON	330 5% 1/4W	R502	1-216-458-11	METAL OXIDE	1.8K 5% 2W F
R309	1-249-411-11	CARBON	330 5% 1/4W	R503	1-216-458-11	METAL OXIDE	1.8K 5% 2W F
R310	1-249-411-11	CARBON	330 5% 1/4W	R504	1-216-458-11	METAL OXIDE	1.8K 5% 2W F
R312	1-249-405-11	CARBON	100 5% 1/4W	R505	1-215-472-00	METAL	130K 1% 1/6W
R313	1-249-427-11	CARBON	6.8K 5% 1/4W	R506	1-249-407-11	CARBON	150 5% 1/4W
R314	1-249-407-11	CARBON	150 5% 1/4W	R507	1-249-426-11	CARBON	5.6K 5% 1/4W
R315	1-249-417-11	CARBON	1K 5% 1/4W	R508	1-249-437-11	CARBON	47K 5% 1/4W
R316	1-249-411-11	CARBON	330 5% 1/4W	R509	1-249-434-11	CARBON	27K 5% 1/4W
R317	1-249-419-11	CARBON	1.5K 5% 1/4W	R510	1-249-422-11	CARBON	2.7K 5% 1/4W
R318	1-249-417-11	CARBON	1K 5% 1/4W	R511	1-216-470-00	METAL OXIDE	18 5% 3W F
R319	1-249-417-11	CARBON	1K 5% 1/4W	R512	1-249-411-11	CARBON	330 5% 1/4W F
R320	1-249-417-11	CARBON	1K 5% 1/4W	R513	1-215-472-00	METAL	130K 1% 1/6W
R321	1-249-433-11	CARBON	22K 5% 1/4W	R514	1-215-457-00	METAL	33K 1% 1/6W
R322 ▲	1-249-427-11	CARBON	6.8K 5% 1/4W	R515	1-249-427-11	CARBON	6.8K 5% 1/4W
R323	1-249-427-11	CARBON	6.8K 5% 1/4W	R516	1-249-428-11	CARBON	8.2K 5% 1/4W
R324 ▲	1-249-389-11	CARBON	4.7 5% 1/4W F	R517	1-249-417-11	CARBON	1K 5% 1/4W
R325	1-249-441-11	CARBON	100K 5% 1/4W	R518 ▲	1-216-379-91	METAL OXIDE	6.8 5% 2W F
R326	1-249-441-11	CARBON	100K 5% 1/4W	R519	1-249-424-11	CARBON	3.9K 5% 1/4W
R328	1-249-419-11	CARBON	1.5K 5% 1/4W	R520	1-249-421-11	CARBON	2.2K 5% 1/4W
R329	1-249-441-11	CARBON	100K 5% 1/4W	R521	1-249-417-11	CARBON	1K 5% 1/4W
R330	1-249-426-11	CARBON	5.6K 5% 1/4W	R522	1-249-431-11	CARBON	15K 5% 1/4W
R331	1-249-417-11	CARBON	1K 5% 1/4W	R523	1-249-417-11	CARBON	1K 5% 1/4W
R333	1-249-429-11	CARBON	10K 5% 1/4W	R524	1-249-429-11	CARBON	10K 5% 1/4W
R334	1-249-413-11	CARBON	470 5% 1/4W	R525	1-249-417-11	CARBON	1K 5% 1/4W
R335	1-249-425-11	CARBON	4.7K 5% 1/4W	R526	1-249-423-11	CARBON	3.3K 5% 1/4W
R336	1-249-441-11	CARBON	100K 5% 1/4W	R527	1-259-871-15	CARBON	6.8M 5% 1/4W
R337	1-249-417-11	CARBON	1K 5% 1/4W	R528	1-249-419-11	CARBON	1.5K 5% 1/4W
R338	1-247-903-00	CARBON	1M 5% 1/4W	R529	1-249-417-11	CARBON	1K 5% 1/4W
R341	1-249-417-11	CARBON	1K 5% 1/4W	R530	1-249-433-11	CARBON	22K 5% 1/4W
R342	1-249-421-11	CARBON	2.2K 5% 1/4W	R531	1-249-410-11	CARBON	270 5% 1/4W
R350	1-249-437-11	CARBON	47K 5% 1/4W	R532	1-249-438-11	CARBON	56K 5% 1/4W
R352	1-247-889-00	CARBON	270K 5% 1/4W	R533	1-247-887-00	CARBON	220K 5% 1/4W
R353	1-249-429-11	CARBON	10K 5% 1/4W	R534	1-249-417-11	CARBON	1K 5% 1/4W
R354	1-249-405-11	CARBON	100 5% 1/4W	R535	1-249-431-11	CARBON	15K 5% 1/4W
R355	1-249-433-11	CARBON	22K 5% 1/4W	R536	1-249-426-11	CARBON	5.6K 5% 1/4W
R357	1-249-405-11	CARBON	100 5% 1/4W	R537	1-249-430-11	CARBON	12K 5% 1/4W
R360	1-249-426-11	CARBON	5.6K 5% 1/4W	R538	1-249-405-11	CARBON	100 5% 1/4W
R361	1-249-429-11	CARBON	10K 5% 1/4W	R539	1-215-373-31	METAL	10 1% 1/6W
R362	1-215-883-11	METAL OXIDE	33 5% 2W F	R540	1-249-408-11	CARBON	180 5% 1/4W
R363	1-249-422-11	CARBON	2.7K 5% 1/4W	R541	1-249-427-11	CARBON	6.8K 5% 1/4W
R364	1-249-420-11	CARBON	1.8K 5% 1/4W	R542	1-249-423-11	CARBON	3.3K 5% 1/4W
R366	1-249-430-11	CARBON	12K 5% 1/4W	R543	1-249-430-11	CARBON	12K 5% 1/4W
R367	1-249-436-11	CARBON	39K 5% 1/4W	R544	1-249-425-11	CARBON	4.7K 5% 1/4W
R368	1-249-427-11	CARBON	6.8K 5% 1/4W	R545	1-247-750-11	CARBON	680 5% 1/2W
R371	1-249-429-11	CARBON	10K 5% 1/4W	R546	1-249-417-11	CARBON	1K 5% 1/4W
R397	1-249-434-11	CARBON	27K 5% 1/4W	R547	1-249-429-11	CARBON	10K 5% 1/4W
R398	1-249-423-11	CARBON	3.3K 5% 1/4W	R548	1-249-496-11	CARBON	100K 5% 1/2W
R401	1-249-409-11	CARBON	220 5% 1/4W	R549	1-249-415-11	CARBON	680 5% 1/4W F
R402	1-249-438-11	CARBON	56K 5% 1/4W	R550	1-249-431-11	CARBON	15K 5% 1/4W
R403	1-249-438-11	CARBON	56K 5% 1/4W	R551	1-249-431-11	CARBON	15K 5% 1/4W
R404	1-249-437-11	CARBON	47K 5% 1/4W	R552	1-249-414-11	CARBON	560 5% 1/4W
R405	1-249-438-11	CARBON	56K 5% 1/4W	R554	1-249-427-11	CARBON	6.8K 5% 1/4W
R406	1-249-405-11	CARBON	100 5% 1/4W	R555	1-249-413-11	CARBON	470 5% 1/4W
R409	1-249-441-11	CARBON	100K 5% 1/4W				

**A C**

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The components identified by shading and mark **▲** are critical for safety. Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
R556	1-216-352-11	METAL OXIDE	1.8 5% 1W F	S101	▲1-571-532-23	SWITCH, TACTIL (POWER)	
R557	1-249-419-11	CARBON	1.5K 5% 1/4W	S102	1-571-532-21	SWITCH, TACTIL	
R558	1-249-410-11	CARBON	270 5% 1/4W	S103	1-571-532-21	SWITCH, TACTIL	
R559	1-249-415-11	CARBON	680 5% 1/4W	S104	1-571-532-21	SWITCH, TACTIL	
R560	1-249-423-11	CARBON	3.3K 5% 1/4W	S105	1-571-532-21	SWITCH, TACTIL	
R561	1-249-496-11	CARBON	100K 5% 1/2W	S106	1-571-532-21	SWITCH, TACTIL	
R562	1-249-429-11	CARBON	10K 5% 1/4W				
R563	1-249-436-11	CARBON	39K 5% 1/4W				
R564	1-215-417-00	METAL OXIDE	680 1% 1/6W				
R565	1-249-425-11	CARBON	4.7K 5% 1/4W				
R566	1-247-883-00	CARBON	150K 5% 1/4W	SG501	1-519-422-11	GAP, SPARK	
R567	1-216-380-11	METAL OXIDE	8.2 5% 2W F				
R568	1-216-390-11	METAL OXIDE	1.2 5% 3W F				
R569	1-214-913-00	METAL OXIDE	100K 1% 1/2W				
R570	1-215-898-11	METAL OXIDE	10K 5% 2W F				
R571	1-216-356-00	METAL OXIDE	3.9 5% 1W F	T261	▲1-427-479-11	TRANSFORMER (SOT)	
R572	1-249-423-11	CARBON	3.3K 5% 1/4W	T501	1-437-195-11	TRANSFORMER, HORIZONTAL DRIVE	
R575	1-249-401-11	CARBON	47 5% 1/4W	T504	▲1-439-416-41	TRANSFORMER ASSY, FLYBACK (NX-1604)	
R577	1-216-451-11	METAL OXIDE	120 5% 2W F	T599	▲1-421-857-11	TRANSFORMER, FERRITE	
R578	1-259-880-11	CARBON	2.2M 5% 1/4W	T601	▲1-424-335-21	TRANSFORMER, LINE FILTER	
R579	▲1-249-415-91	CARBON	680 5% 1/4W F				
R580	1-215-863-11	METAL OXIDE	100 5% 1W F				
R581	1-249-417-11	CARBON	1K 5% 1/4W F				
R582	1-215-863-11	METAL OXIDE	100 5% 1W F				
R583	1-215-863-11	METAL OXIDE	100 5% 1W F				
R586	1-247-746-11	CARBON	390 5% 1/2W				
R587	▲1-215-870-91	METAL OXIDE	1.5K 5% 1W F				
R589	1-249-441-11	CARBON	100K 5% 1/4W				
R598	1-249-389-11	CARBON	4.7 5% 1/4W F				
R599	1-249-417-11	CARBON	1K 5% 1/4W				
R601	▲1-202-726-91	SOLID	3.9M 10% 1/2W				
R602	▲1-205-792-11	WIREWOUND	1.8 5% 10W F				
R603	1-247-889-00	CARBON	270K 5% 1/4W	X101	1-577-082-11	VIBRATOR, CERAMIC	
R605	▲1-205-984-11	WIREWOUND	150 5% 20W	X301	1-567-505-11	OSCILLATOR, CRYSTAL	
R610	▲1-217-224-11	WIREWOUND	100 10% 2W F				
R611	1-215-872-11	METAL OXIDE	3.3K 5% 1W F				
R612	1-205-986-11	WIREWOUND	4.7K 5% 20W				
R613	1-249-437-11	CARBON	47K 5% 1/4W				
R614	1-249-429-11	CARBON	10K 5% 1/4W				
R615	▲1-216-463-91	METAL OXIDE	12K 5% 2W F				
R616	▲1-247-719-91	CARBON	3.3K 5% 1/4W F				
R617	1-249-401-11	CARBON	47 5% 1/4W F				
R618	1-247-895-00	CARBON	470K 5% 1/4W				
<b>&lt;VARIABLE RESISTOR&gt;</b>							
RV131	1-238-012-11	RES, ADJ, CARBON	1K				
RV201	1-238-016-11	RES, ADJ, CARBON	10K				
RV306	1-238-016-11	RES, ADJ, CARBON	10K				
RV307	1-238-011-11	RES, ADJ, CARBON	470				
RV501	1-228-728-00	RES, ADJ, CERAMIC	CARBON 100K				
RV502	1-238-020-11	RES, ADJ, CARBON	100K				
RV503	1-224-251-99	RES, ADJ, METAL GLAZE	4.7K				
RV505	1-238-017-11	RES, ADJ, CARBON	22K				
RV506	1-238-019-11	RES, ADJ, CARBON	47K				
RV507	1-238-010-11	RES, ADJ, CARBON	330				
RV508	1-238-012-11	RES, ADJ, CARBON	1K				
<b>&lt;RELAY&gt;</b>							
RY601▲1-515-573-13 RELAY, POWER							
<b>&lt;SWITCH&gt;</b>							
<b>&lt;CAPACITOR&gt;</b>							
C701	1-136-601-11	FILM		0.01MF	10%	630V	
C702	1-162-116-00	CERAMIC		680PF	10%	2KV	
C704	1-124-915-11	ELECT		10MF	20%	63V	
C705	1-102-116-00	CERAMIC		680PF	10%	50V	
C706	1-102-116-00	CERAMIC		680PF	10%	50V	
C707	1-102-116-00	CERAMIC		680PF	10%	50V	
C708	1-102-110-00	CERAMIC		220PF	10%	50V	
C709	1-102-110-00	CERAMIC		220PF	10%		
C710	1-102-110-00	CERAMIC		220PF	10%	50V	
C712	1-124-477-11	ELECT		47MF	20%	16V	
C722	1-162-622-11	CERAMIC		330PF	10%	6.3KV	
<b>&lt;DIODE&gt;</b>							
D701	8-719-911-19	DIODE	ISS119				
D702	8-719-911-19	DIODE	ISS119				



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REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK		
*****									
MISCELLANEOUS									
*****									
L701	1-408-417-00	INDUCTOR	47UH	A1-426-358-11	COIL, DEMAGNETIZATION				
<TRANSISTOR>									
Q701	8-729-423-37	TRANSISTOR	2SC3311A-QRS	A1-451-268-11	DEFLECTION YOKE (Y21PXA)				
Q702	A8-729-326-11	TRANSISTOR	2SC2611	1-452-032-00	MAGNET, DISK; 10MM Ø				
Q703	8-729-423-37	TRANSISTOR	2SC3311A-QRS	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM Ø				
Q704	8-729-326-11	TRANSISTOR	2SC2611	1-452-277-00	MAGNET, BMC				
Q705	8-729-423-37	TRANSISTOR	2SC3311A-QRS	A1-536-678-31	ANTENNA BLOCK				
Q706	8-729-326-11	TRANSISTOR	2SC2611	(KV-20TR22(U), KV-20TS27(U) ONLY)					
*****									
PICTURE TUBE (A51JUH50X)									
*****									
ACCESSORIES AND PACKING MATERIALS									
*****									
PART NO.	DESCRIPTION	REMARK							
R701	1-202-838-00	SOLID	100K 10%	1/2W	1-501-372-41	ANTENNA, TELESCOPIC			
R702	1-216-393-00	METAL OXIDE	2.2	5%	3W	1-513-379-00	CONVERTER (EAC-25) (KV-20TS27(C) ONLY)		
R703	1-202-842-11	SOLID	220K	10%	1/2W	1-562-443-11	CONNECTOR, ANTENNA		
R704	1-202-846-00	SOLID	470K	10%	1/2W	(KV-20TR22(U), KV-20TS27 (U) ONLY)			
R705	1-202-837-00	SOLID	82K	10%	1/2W	3-752-986-21	MANUAL, INSTRUCTION		
R706	1-202-549-00	SOLID	100	10%	1/2W	3-752-986-31	MANUAL, INSTRUCTION (KV-20TS27(C) ONLY)		
R707	1-202-842-11	SOLID	220K	10%	1/2W	*4-030-589-01	INDIVIDUAL CARTON		
R708	1-202-824-00	SOLID	3.3K	10%	1/2W	*4-030-606-01	CUSHION (UPPER) (ASSY)		
R709	1-202-824-00	SOLID	3.3K	10%	1/2W	*4-030-607-01	CUSHION (LOWER) (ASSY)		
R710	1-202-549-00	SOLID	100	10%	1/2W	*4-380-340-01	BAG, PROTECTION		
REMOTE COMMANDER									
*****									
R711	1-249-411-11	CARBON	330	5%	1/4W	1-465-385-11	REMOTE COMMANDER (RM-781)		
R712	1-249-411-11	CARBON	330	5%	1/4W	(KV-20TR22(U) ONLY)			
R713	1-202-824-00	SOLID	3.3K	10%	1/2W	1-465-387-11	REMOTE COMMANDER (RM-783)		
R714	1-249-421-11	CARBON	2.2K	5%	1/4W	(KV-20TS27(U/C) ONLY)			
R715	1-249-422-11	CARBON	2.7K	5%	1/4W	4-394-031-01	COVER, BATTERY (FOR RM-781, RM-783)		
R716	1-249-414-11	CARBON	560	5%	1/4W				
R717	1-249-417-11	CARBON	1K	5%	1/4W				
R719	1-249-420-11	CARBON	1.8K	5%	1/4W				
R720	1-249-414-11	CARBON	560	5%	1/4W				
R722	1-215-924-00	METAL OXIDE	15K	5%	3W				
R723	1-249-413-11	CARBON	470	5%	1/4W				
R725	1-249-421-11	CARBON	2.2K	5%	1/4W				
R726	1-249-417-11	CARBON	1K	5%	1/4W				
R727	1-249-419-11	CARBON	1.5K	5%	1/4W				
R728	1-249-413-11	CARBON	470	5%	1/4W				
R729	1-249-411-11	CARBON	330	5%	1/4W				
R730	1-215-924-00	METAL OXIDE	15K	5%	3W				
R732	1-247-818-11	CARBON	300	5%	1/4W				
R733	1-249-422-11	CARBON	2.7K	5%	1/4W				
R734	1-249-421-11	CARBON	2.2K	5%	1/4W				
R735	1-249-417-11	CARBON	1K	5%	1/4W				
R737	1-215-924-00	METAL OXIDE	15K	5%	3W				
R738	1-202-848-00	SOLID	680K	10%	1/2W				
R739	1-202-838-00	SOLID	100K	10%	1/2W				
R740	1-202-842-11	SOLID	220K	10%	1/2W				
<VARIABLE RESISTOR>									
*****									
RV701	A1-230-619-11	RES, ADJ, METAL GLAZE	110M						
RV702	1-228-993-00	RES, ADJ, CARBON	4.7K						
RV703	1-228-991-00	RES, ADJ, CARBON	2.2K						
RV704	1-228-993-00	RES, ADJ, CARBON	4.7K						
RV705	1-228-991-00	RES, ADJ, CARBON	2.2K						
RV706	1-228-993-00	RES, ADJ, CARBON	4.7K						
RV707	1-228-995-00	RES, ADJ, CARBON	22K						
RV708	1-230-641-11	RES, ADJ, METAL GLAZE	2.2M						